Textile World

VOL. 84, NO. 5—ESTABLISHED 1868

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McGRAW-HILL PUBLISHING CO., INC.
Bragdon, Lord & Nagle Division, 330 West 42d St., New York

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London, England...*Aldwych House, W.C.2*

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TEXTILE WORLD

(Formerly *Textile World Journal*) with which are combined *Textiles*, *Possell's Textile Journal* and *Textile Advance News*. Published monthly United States and Possessions, $3 per year; Canada (including Canadian duty), $3.50; all other countries, $5, U. S. currency or 20 shillings. Single copy, 35 cents, excepting special issues.

Of this issue, 10,712 copies were printed.

Member of Audit Bureau of Circulations
Member of Associated Business Papers, Inc.

SHOULDER *to Shoulder*

IT has always been a policy of INDUSTRIAL to serve all customers fairly, intelligently and helpfully. ◆ ◆ We have continually pioneered in developing new and improved products, and in working with customers to achieve broader markets for commodities made of yarns and fabrics sold under the trade names SPUN-LO . . . PREMIER . . . DUL-TONE. ◆ ◆ This year we are intensifying our sales promotional activities on behalf of retail outlets. We are carrying out a program which will result in still greater demand for all merchandise made of INDUSTRIAL products. ◆ ◆ Thus we are standing shoulder to shoulder with our customers, in common interests. We are thinking in terms of profitable marketing for those manufacturers who use our products. We realize that the ultimate success of this company depends upon the successes of our customers.

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Textile World

April, 1934

Editor: DOUGLAS G. WOOLF

A Double-Barreled Warning

1. TO MANUFACTURERS —

A REACTIONARY attitude on the part of employers is threatening to arrest recovery. The reassertion of this attitude has been conspicuous during the last month or six weeks.

We encountered it at almost every turn, during the course of a recent series of mill trips . . . . "I understand the NRA is just about dead." (This was said with a gleam in the speaker's eye, registering triumph. Triumph over what?) . . . . "Mr. So-and-so told me he hasn't been able to trade an old dollar for a new one since last September." (And yet Mr. So-and-so's company made a substantial profit in 1933, as against a serious loss in 1932 and 1931.)

That's the kind of conversation that can *make* things go wrong. We are not trying to pretend that there is nothing to worry about. Some of the proposed legislation holds a very real threat to the interests of both employers and employed. It should be resisted. But meanwhile, harm instead of good is accomplished by denying the progress that is being made.

Accompanying this pessimistic attitude is a growing tendency to be negative on any and all suggestions for the future. This seems to be based on the idea that safety lies in the direction of inaction. This is in sharp contrast to the pioneering role of the textile industry last spring and summer when it led all other industries in its willingness to try something new. As the net result of those experiments, the whole complexion of the industry has changed in less than a year. We do not mean of course that all suggestions for action should be adopted, but we do feel that automatic resistance to new ideas is the shortest road to stagnation. There are constructive moves developing under the surface of the textile industry today which reflect credit upon individuals and groups. They merit at least intelligent study by the industry at large—rather than unthinking rejection.

2. TO ORGANIZED LABOR —

THE AMAZING tactics of the A. F. of L. constitute a serious menace to recovery.

We shall confine our comment to the actions of its textile union, the United Textile Workers of America. When Vice-President Francis J. Gorman reported publicly a growing demand for a general strike on the part of some 200,000 alleged union workers in cotton mills, he was menacing the status of all workers in this industry.

This is not the proper forum for a debate on the specific complaints advanced by Mr. Gorman. The Industrial Relations Board offers such a forum.

However, we can and do take issue with the implication that textile employees see the need for, or desire, a strike.

During the last year, the real cause of labor in the textile industry has been advanced more notably than during any similar period in its history. Hopes which far-seeing manufacturers have envisioned for years, have been realized, at least partially. Labor knows that to be a fact—and is not disposed to yield that progress in order to advance the organization plans of the U. T. W.

For that is what all the shooting is about. It is not that Mr. Gorman, and his chief, Thomas F. McMahon, are concerned over the prosperity of textile workers, but that they are interested primarily in the membership status of the U. T. W.

And yet, it is through suggestions of the sort made by Mr. Gorman, in accordance with best union strategy, that the burden can be saddled upon the backs of the workers and the latter unwittingly forced to assume the responsibility for a cause in which they are not primarily interested. It has been done before—and can be done again.

If the A. F. of L. should be successful in fomenting a textile strike at this time, it will have betrayed the very group whose interests it pretends to serve.

The Editor Says:

WHETHER A. D. Whiteside's "leave of absence" as a division administrator of NRA is permanent or not, he has already left a vital contribution to the recovery program. We have stated previously in these columns our own evaluation of his services. As further evidence, we submit below the opinion of a McGraw-Hill editor who has lived in Washington since NRA was a pup:

"He (Mr. Whiteside) has been with NRA nine months, has spent eight days of that time at his own job as president of Dun & Bradstreet. He has been one of the rocks of strength to NRA, has handled special investigations and studies in addition to his administrative work, has fought steadily for the realistic attitude (between pragmatists and idealists), has defended sane price policies and industry relationships consistently."

Anyone who knows how hard-boiled a journalist in Washington can become—in fact has to become—will realize that this is praise indeed.

❖

Other Textile Sacrifices

IN fact, when the history of NRA is written, the contribution of man-power made by the textile industry will comprise an important chapter.

Nelson Slater and R. T. Stevens were among the first recruits. Then came W. S. Nicholson and H. S. Morrow, whose recent retirement as deputy administrators was marked by a farewell dinner with all the fixings. F. S. Blanchard is now serving his time. A. Henry Thurston, an alumnus of TEXTILE WORLD's editorial staff, got into the game early and is still at it.

It is almost superfluous to mention again the job George Sloan has done as a Washington commuter. W. J. Vereen and Henry P. Kendall have seen service on the National Industrial Board. Mr. Kendall and Lionel J. Noah are members of Secretary Roper's long-term planning committee. Many other textile manufacturers, selling agents, and association executives have given their time unstintingly.

We have seen most of these men in action—and know the job they have done. We hope the industry and the NRA appreciate it.

Finally, the record would not be complete without mention of E. T. Pickard, head of the Textile Division of the Department of Commerce. He rarely sits in the "wax-works"; seldom gets a beam of the lime-light. But those in the industry who know him—and who doesn't?—realize what he has accomplished for them, as an ever-willing and ever-able adviser, during the last year.

❖

Try Anything Once?

THEORETICALLY, the Bankhead Bill (in conference committee, at this writing) seems to us impossible of equitable enforcement and contrary to every principle of government which we have previously regarded as sound. However, we recall that we regarded the Agricultural Adjustment Act as unenforceable—and yet relatively little complaint seems to be heard on that score. We still consider it theoretically unsound, but we readily admit that the condition of the farmers—at least of the cotton farmers, with whom we are most familiar—has improved remarkably, and that the processing tax does not seem to have resulted in curtailed consumption thus far.

We have adjusted ourselves to so many new things in the last year that one more or less seems of little importance. We have a hunch that is why cotton manufacturers have taken the Bankhead Bill so calmly.

In the spirit of the day, we'll try anything once!

❖

Reform and Recovery

THE relative status of the capital goods industries and the consumer goods industries has been outlined admirably by the committee representing the latter. "The main burden of unemployment is in the capital goods industries," states this group, "and this burden can not be loaded entirely or primarily upon those manufacturers producing consumer goods, i.e. food, clothing, fuel, etc. . . . At this state of recovery, we believe that further substantial progress in re-absorbing the unemployed necessarily depends upon revival of capital goods industries."

This leads to the question: What, then, is the trouble in the capital goods industries? What factors steadily hold back recovery in this vitally important field?

"It is not sufficient answer merely to say that surplus capacity has existed," states the committee. "The consumer goods industries themselves would, in our judgment, have substantial demand for new capital in the way of repair, replacement and modernization, without adding to productive capacity, provided business could have normal and reasonable confidence. . . . What retards and destroys such confidence? We believe the answer is found in the unnecessary and repeated stirring up of uncertainties and fears which, while assuming political form as legislative proposals, are pertinent because of their direct bearing on the economic factors involved." As examples of the "major political obstacles," mention is made of the Wagner bill, the Connery bill, and the securities act.

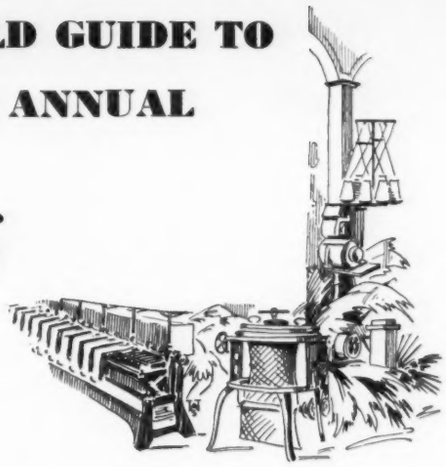
This brings up the moot question of reform vs. recovery. One group of people believes that now is the time, while memory of the depression is still fresh, to take steps to reduce the violence of its recurrencies; another group holds that recovery must first proceed without the disturbing effects of such reforms.

We sympathize keenly with the view that much of a basic nature is still to be done if 1929 is not to be repeated. We also understand the fear that postponement of such action may result, through forgetfulness, in eventual inaction. Nevertheless, on the same premise on which the Administration has been pushing first for re-employment, we believe that further unsettling legislative programs should be deferred until the maximum number of people who want to work have jobs again.

Call it compromise, procrastination, or what you will. We can only repeat what we said in last month's issue: "The needs of a people transcend theories of government."

TEXTILE WORLD GUIDE TO THIRTIETH ANNUAL

Knitting Arts Exhibition



SEVERAL distinctive features combine this month to lend unusual significance to "Knit Goods Week" in Philadelphia. The 30th Annual Knitting Arts Exhibition will be held at the Commercial Museum, April 23 to 27, under the auspices of the National Association of Hosiery Manufacturers in conjunction with the Underwear Institute, this being the first time the latter body has cooperated in this standard event. Code problems will be discussed and solutions sought at an all-day open forum of the hosiery industry, to be held at the Bellevue-Stratford Hotel, Monday, April 23. The annual convention of the National Association of Hosiery Manufacturers will be held at the Museum, Wednesday, April 25, the chief speakers being William Meyer, president, and Earl Constantine, managing director. A description of the exhibits follows:

AAA Silk Laboratory, New York. Booth 53A. Textile testing. Featuring 9-meter evenness test.

Aberfoyle Mfg. Co., Philadelphia. Booths 274, 275, 280, 281, 280AA, 281AA. Durene yarn.

Adamson Bros. Co., New York City. Booths 299-301, 314-316. Lastex yarns and fabrics and garments made therefrom.

Adelphia Textile Co., Philadelphia. Booth 343. Tram, spun-silk, rayon, immunized and mercerized yarns for hosiery; natural and dyed looping and seaming threads.

Adolff Bobbin Co., Kearny, N. J. Booths 151, 152. Paper tubes, spools, bobbins, etc.

Allentown Bobbin Works, Inc., Allentown, Pa. Booth 164. Bobbins and spools used in the manufacture of silk, rayon, and cotton. Featuring true-running and true-balanced bobbins; fiber heads permanently secured to the barrels with newly developed drive-screws.

American Aniline & Extract Co., Inc., Philadelphia. Booth 20. Textile chemicals.

American Bemberg Corp., New York. Booths 372, 391. Bemberg yarns and fabrics and wearing apparel made therefrom. Featuring Sunspun and Matesa yarns, new all-Bemberg and Bemberg and Lastex construction and garments styled in these fabrics.

American Enka Corp., New York. Booths 196, 197. Rayon yarns. Featuring hosiery and underwear manufactured from Enka Perlglo and Enko Englo.

American Glanzstoff Corp., New York. Booths 170, 171, 192, 193. Lion brand rayon yarns and fabrics made therefrom.

American Thread Co., New York. Booths 198, 199. Cotton and mercerized threads.

American Wool & Cotton Reporter, Boston. Booths 38, 39. Textile publishers.

American Yarn & Processing Co., Mt. Holly, N. C. Booths 218, 219. Combed and carded yarns.

Edward R. Ammon, Reading, Pa. Booth 32. Hosiery inspecting equipment. Featuring new models which measure the size of the feet automatically during the inspecting operation and produce an expansion which exposes all weak places in the fabric.

Joseph Amon, Rahway, N. J. Booth 183. Moistening boxes and emulsion cloth for full-fashioned hosiery machines, topping tables, knitters' benches.

Arrow Needle Co., Manchester, N. H. Booth 8. Complete line of latch needles for flat and circular machines.

Atwood Machine Co., Stonington, Conn. Booths 211, 221, 227, 228, 241. Throwing equipment, including Monarch twister, utility twister, winder, redraw, and 5B doubler-twister. Featuring oilless operation of throwing machinery and a new chain-drive redraw with over-end delivery and motor drive through a chain and a new type of traverse bar and traverse cam.

Bausch & Lomb Optical Co., Rochester, N. Y. Booths 175, 176. Optical instruments for the textile industry including textile projectors, wide-field stereoscopic microscopes, textile laboratory microscopes, photomicrographic apparatus, fiber-measuring apparatus, pick and course counters. Featuring a new simplified textile projector for study of fabric defects.

Boger & Crawford, Philadelphia. Booths 248, 249, 262, 263. Mercerized yarns.

Boshamer & Co., Philadelphia. Booths 34, 35. Cotton and novelty yarns.

H. Brinton Co., Philadelphia. Booths 117, 122. Circular knitting machines. Featuring ribbers for making infants' tops in plain, stripe, and mesh styles; a ribber for making jacquard tops for boys' hose with rubber inlay; and equipment for making fancy jersey cloth for dress goods.

H. W. Butterworth & Sons Co., Philadelphia. Booths 60 and A. Textile finishing machinery. Featuring the Tube-Tex machine for continuously extracting, processing, drying, finishing, conditioning, and measuring tubular-knit goods in flat form in one operation; showing also the separate extracting and processing unit.

Cannon Mills, Inc., Philadelphia. Booth 229. Cotton and mercerized yarns.

Clifford & Lawton, Inc., New York. Booth 143. Textile publishers.

Clover Leaf Mfg. Co., Honesdale, Pa. Booth 358. Bobbins and spools for the silk and rayon industry; all-metal pin boards and 5-ply wood-base pin boards; steaming crates; multiple-bearing redraw brackets; and metal reel caps.

College Maid Shop, Maryville, Tenn. Booth 17. Uniforms for mill operatives.

Charles Cooper Co., Inc., Bennington, Vt. Booths 310, 311. Spring-needle rib knitting machines and bathing suits, outerwear, and underwear fabrics made thereon; spring-beard needles for Tompkins, Crane, Campbell & Clute, and Gormley machines; needles for spring-needle rib machines and milanese and tricot machines; latch needles including a line of solid-butt hosiery needles.

Cotton, Atlanta, Ga. Booths 373, 374. Textile publishers.

Crawford Mfg. Co., New Brunswick, N. J. Booth 278. Automatic stop motions for knitting machines.

J. D. Cunningham, Philadelphia. Booth 31. Double-carded knitting yarns, bleached, dyed, and natural. Featuring new-processed yarns for tuck-stitch underwear and soft-finished yarns.

Davison Publishing Co., New York. Booth 142. Textile publishers.

Dixie Mercerizing Co., Chattanooga, Tenn. Booths 220, 221. Mercerized yarns.

Dubied Machinery Co., New York City. Booth 359. New type pearl-stitch

machines with jacquard appliance for men's and women's sport goods and children's and infants' wear.

Duffy Silk Co., Buffalo, N. Y. Booths 360, 361. Thrown silk.

Joseph Dunlop Sons, Inc., New York. Booth 342. Japan raw silk and silk hosiery tram on cones and in skeins. Featuring hosiery tram for direct knitting on full-fashioned machines without first humidifying the yarn; also a new method for processing silk to eliminate the washboard effect in women's full-fashioned hosiery made on the three-carrier machine attachment.

Duplan Silk Co., New York. Booths 233, 234. Thrown silk and rayon.

DuPont Rayon Co., New York. Booths 205, 206, 233, 234. Rayon yarns and fabrics and garments made therefrom.

DuPont Rayon Co., Acele Dept., New York. Booths 165, 166. Acele yarns and garments made therefrom.

Embosograf Corp. of America, New York. Booth 36. Hand-operated machines for making embossed show cards; display easels for holding show cards.

Ewing-Thomas Corp., Chester, Pa. Booth 33. Mercerized yarns.

Fairchild Publications, New York. Booths 367, 368, 395, 396. Textile publishers.

W. F. Fancourt & Co., Philadelphia. Booth 185. Soaps, oils, and specialties for dyeing, degumming, delustering, and conditioning silk and rayon. Featuring Aquapel, a new splash or water-repellent product for hosiery; and Regensol D82, a chemical for preventing and dissolving metallic soaps.

Fidelity Machine Co., Philadelphia. Booths 245-247, 264-266. Complete line of Universal ribbers in operation. Featuring equipment for giving stripe effects on hosiery in from two to six colors. Emphasizing also a ribber operating a two-color striper in connection with elastic laying-in attachments. Fidelity-Altemus bobbin winders, multiple die-creasing machines, and sixteen-carrier braiding units for fish lines.

J. A. Firsching, Utica, N. Y. Booths 334, 335. Cutting machines for the underwear trade. Featuring multiple collarette cutting and winding machines for cutting two or more strips at one time in circumference of rolls, length-cutting machines for cutting strips into various lengths; cloth slitting machine which takes a roll of tubular fabrics, slits it open on each side, making two rolls in one; and strip-cutting machine which cuts the cloth from the last named machine into various widths of strips.

Fletcher Works, Inc., Philadelphia. Booths 215-217. Complete line of silk and rayon throwing machinery. Featuring a new Apex twister; a full-length 200-spindle, double-deck model will be shown with Oilwell spindles, unit control, pressed-steel cloth rolls, and adjustable spindle swings.

J. B. Ford Sales Co., Wyandotte, Mich. Booth 291. Textile chemicals used in scouring, bleaching, dyeing.

Foster Machine Co., Westfield, Mass. Booths 296, 297, 319. Cone winding machines for use in silk throwing plants, knitting mills, and rayon and other synthetic fiber plants. Featuring a method of winding cones either dry or with conditioning for knitting and cone warping.

Franklin Needle Co., Franklin, N. H. Booth 15-H. Latch needles, sinkers, jacks, guides, and points. Featuring streamlined latch needles.

Franklin Process Co., Providence, R. I. Booth 222. Bleached and dyed yarns for underwear and other knit goods.

General Electric Co., Schenectady, N. Y. Booth 134. Textile motors, contactor switches for control of small motors, thrustor, heating units, Glyptal products.

General Electric Vapor Lamp Co., Hoboken, N. J. Booths 156, 157. Cooper-Hewitt lighting equipment for textile mills.

Grand Rapids Textile Machinery Co., Grand Rapids, Mich. Booths 61, 62. Equipment for use in knitting mills and for dyeing and finishing tubular knit goods. Featuring two new finishing machines shown for the first time.

Grove Silk Co., Dunmore, Pa. Booth 9. Thrown silk.

Gulf Refining Co., Philadelphia. Booth 332. Petroleum products. Featuring oils and greases especially adapted for use in knitting mills.

Hampton Co., East Hampton, Mass. Booths 214, 225. Durene and rayon yarn.

Oscar Heineman Corp., Chicago. Booths 348, 349. Silk and rayon knitting yarns.

Hellwig Silk Dyeing Co., Philadelphia. Booth 195. Resist and regular dyed silks. Weighted and unweighted. Dyed rayon and novelty yarns; pure dye, weighted, dyed, and finished silk piece goods.

Hemphill Co., Pawtucket, R. I. Booths 99-104. Hosiery machines equipped with new automatic transfer device and sleeve cylinder, including 70-gage, plain, high-cylinder machine knitting children's lisle hose high-spliced and double soles; 50-gage split-foot machine knitting silk, white sports half hose; 60-gage, 19-independent-step, 24-feed wrap-stripe machine equipped with short-move ratchet knitting silk-plated half hose; 48-gage, 19-independent-step, 24-feed, wrap-stripe machine equipped with short-move ratchet, knitting wool half hose; 48-gage, duplex, 12-step double-feed machines equipped with short-move ratchet with tipper knitting wool-mixture half hose. Also showing 36- to 42-gage, rib-to-toe machine with striper, knitting genuine 1x1 rib and high-rib effects and eliminating transfer knitting, knitting misses' anklets; and 36-gage, 48-step, jacquard, reverse-plating machine knitting large figures.

John Hepworth & Co., Inc., Philadelphia. Booth 200. Looping machines in operation.

Louis Hirsch Textile Machines, Inc., New York. Booths 207-209, 230-232. Representing Karl Lieberknecht, manufacturer of Kalio machines; Otto Scherf, manufacturer of Scherf needles; and Helios, manufacturer of Helios sinkers, dividers, etc. A Kalio single-unit full-fashioned hosiery machine will be in operation at a nearby mill.

Alfred Hoffman, Inc., West New York, N. J. Booths 250, 251, 260, 261. Full-fashioned hosiery made on machines marketed by this company.

E. F. Houghton & Co., Philadelphia. Booths 167, 168. Textile chemicals; beltings; and lubricants. Featuring new Okay Tred silk-spindle belting, Sta-Put lubricants; and new products for soaking and sizing rayon, scouring textiles, dyebath assistants, and finishing oils.

Howes Publishing Co., New York. Booths 131, 132, 159, 160. Textile publishers.

Hygrolit, Inc., Kearny, N. J. Booths 151, 152. Yarn conditioning machinery. Featuring the new Model BDE machine for cone conditioning.

Industrial Rayon Corp., Cleveland, Ohio. Booths 213, 236. Rayon yarns and knitted fabrics.

International Nickel Co., Inc., New York. Booths 13, 14. Mill and fabricated forms of Monel metal, nickel-clad steel, and Inconel for dyehouse and mill equipment.

Loyal T. Ives Co., New Brunswick, N. J. Booth 163. Spring-beard needles, sinkers, jacks, and other special parts.

Jacquard Knitting Machine Co., Inc., Philadelphia. Booths 304, 305. Circular jacquard knitting machines. Featuring circular jacquard links-and-links machine.

Jasper-Groz Needle Co., Inc., New York. Booth 371. Knitting machine needles made by Theodore Groz & Soehne, and Pemco dye nets manufactured by La France Industries.

Johnston Mills Co., Charlotte, N. C. Booth 243. Durene, combed and carded cotton yarn.

Jonas & Naumburg Corp., New York. Booth 204. Rabbit hair. Featuring rabbit hair yarns and fabrics therefrom.

W. H. & F. Jordan, Jr., Mfg. Co., Philadelphia. Booth 133. Textile oils, soaps, and specialties. Featuring Duosolve, a water-softening compound; Seronex, a soap in liquid form; Pircine, a penetrant and silk-soaking assistant; and special oils and softeners.

Kasanof Tubular Machines, Inc., Brooklyn, N. Y. Booths 11, 12. Steaming and finishing machine for tubular knit fabrics with which is combined a drying attachment.

Kaumagraph Co., New York. Booths 181-184. Lithographed box wraps, labels, posters, and embossed seals; improved Berks transfer iron; Transol, a solvent for transfers, spots, and stains; Texmark, a new stamping ink.

Laconia Needle Co., Laconia, N. H. Booth 191. Latch needles in both screw rivet and rivetless types.

W. T. Lane & Bros., Poughkeepsie, N. Y. Booth 289. Canvas baskets, trucks, etc., for mill use.

R. K. Laros Silk Co., and Laros Textiles Co., Bethlehem, Pa. Booths 376, 387. Silk throwsters.

Percy A. Legge, Philadelphia. Booth 353. Knitting yarns.

Leighton Machine Co., Manchester, N. H. Booth 392. Circular knitting machines.

Lestershire Spool & Mfg. Co., Johnson City, N. Y. Booth 190. Featuring fiber spools for over-end warping, reverse twisting, and steaming; and various types of special-purpose fiber spools.

Wm. A. P. MacKnight, Philadelphia. Booth 290. Cotton yarns.

Malina Co., Inc., New York. Booths

336, 337. Rayon yarns, natural and converted; worsteds and novelty yarns.

Markem Machine Co., Inc., Keene, N. H. Booths 298, 317. Marking, printing, trade-marking machines, type and engraved dies, ink and marking supplies; label pasting machines. Featuring label and marking machines; cone-sticker printer and perforator; automatic gum-label printer; and high-speed, hand-driven label or sticker printer.

C. R. McGinnis, Reading, Pa. Booth 283. Knitting yarns.

Merkel Bobbin Co., Allentown, Pa. Booth 210. Bobbins for silk and rayon throwsters and weavers.

Merrow Machine Co., Hartford, Conn. Booths 340, 351. Overseaming, hemming, overedging, plain crochet, and shell-stitch machines.

Meyer & Marks Yarn Co., New York. Booth 331. Staple fiber and yarns and fabrics made therefrom.

Clarence L. Meyers, Inc., Philadelphia. Booths 302, 303, 313. Cotton yarns single and plied, novelty yarns, and a new specially prepared yarn for outerwear and underwear.

James E. Mitchell Co., Philadelphia. Booth 318. Cotton yarns, carded and combed, natural and dyed.

L. P. Muller & Co., Philadelphia. Booth 186. Cotton, carded and combed and specialty yarns.

New Brunswick Needle Co., New Brunswick, N. J. Booth 278. Springbeard needles, sheet-metal pressings, sinkers, slides, jacks, transfer points, sley points, traverse points, guides, etc.

Nyanza Color & Chemical Co., New York. Booth 242. Textile chemicals and dyestuffs.

Onyx Oil & Chemical Co., Jersey City, N. J. Booth 341. Scouring, dyeing, and finishing compounds for processing hosiery, underwear, etc.

Paramount Textile Machinery Co., Chicago. Booths 239, 240, 254-257. Hosiery drying machines and forms, inspection machines, and looper attachments. Featuring Dual-heat hosiery finishing machine and a new hosiery finishing machine with electrical forms.

Payson Bros., Inc., New York. Booth 244. Converted rayon and novelty yarns.

Peerless Hosiery Dyeing Co., Inc., Pleasantville, N. J. Booths 5 and 6. Hosiery dyers.

Penn Worsted Corp., Philadelphia. Booth 189. Novelty yarns.

Geo. B. Pfingst, Inc., Philadelphia. Booth 312. Thrown silk yarns for full-fashioned and seamless knitting. Featuring a yarn which can be used for knitting direct from the cone for regular full-fashioned machines or under the three-carrier system.

Philadelphia Drying Machinery Co., Philadelphia, Pa. Booth 182. Drying machinery for raw stock, skein and warp yarns, hosiery, underwear, piece goods; tenter dryers, carbonizing equipment, and vacuum extractors.

Philadelphia Metal Drying Form Co., Philadelphia. Booths 169 and 194. Hosiery drying equipment; tissue inserting machines. Featuring new electric drying equipment having unique method of distributing heat at different temperatures to the various parts of the hosiery.

Max Pollack & Co., Inc., New York. Booth 235. Cotton and mercerized sewing thread in all colors.

Process Development Co., New London, Conn. Booth 347. Equipment for moistening cones for knitting.

Proctor & Schwartz, Inc., Philadelphia. Booths 252, 253, 258, 259. Automatic boarding, drying, and stripping machine for hosiery with new conditioning attachment for giving stockings an extra conditioning.

Rayon & Melliand Textile Monthly, New York. Booths 375, 388. Textile publishers.

Reece Button Hole Machinery Co., Boston. Booths 338, 339. Buttonhole and button sewing machinery. Featuring cord and thread-trimming buttonhole machine; adjustable fly-bar machine, capable of adjustment for different lengths of buttonholes; imitation-sleeve buttonhole machine; cord and thread-trimming machine to trim different lengths of straight-finish buttonholes; and Union button sewing machine sewing on leather shank buttons by an invisible stitch or through-and-through with a stay-button.

Robert Reiner, Inc., Weehawken, N. J. Booths 368, 369, 394, 395. Full-fashioned hosiery machines. Demonstrating an embroidering machine for embroidering clocks on full-fashioned and seamless hosiery without splitting the stocking.

Charles Reitzes, Philadelphia. Booth 50A. Representing National Bundle Tyer Co.

J. E. Rhoads & Sons, Philadelphia. Booth 327. Leather belting, spindle and winder belts, textile straps, leather packings, belt dressings and preservers, Tannate round belt and laces. Featuring a Tannate-Rockwood pivoted motor base demonstrator.

Rochester Engineering & Centrifugal Corp., Rochester, N. Y. Booths 138, 153. Rotary hosiery dyeing machines, centrifugal extractors, and silk impregnator for soaking silk. Featuring a textile centrifugal extractor in complete Monel metal construction with Monel metal baskets and outer case.

Royersford Needle Works, Inc., Royersford, Pa. Booths 356, 357. Needles, welt hooks, transfer points, narrowing points, sinkers, dividers, etc.

Sauquoit Silk Mfg. Co., New York. Booth 354. Silk yarns for knitting and braiding.

Scholler Bros., Inc., Philadelphia. Booths 187, 188. Soaps, softeners, finishing compounds, etc. Featuring a compound for giving a combination dull, water-repellent, and spot-proof finish on hosiery.

Scott & Williams, Inc., New York. Booths 105-116. Circular knitting machines for plain and fancy hosiery for women, men, and infants; and special circular machines for underwear and special fabrics. Featuring 25-step, K-type spiral gusset-toe machine for women's high-quality hose; HH type in both 25-step spiral and sinker reverse plating for fancy half hose; HH type 10-gage for heavy half hose and boot-length hose; the ES machine with 36-wrap yarn fingers and color-in-color and color-beside-color attachments; 25-step, type K, gusset-toe spiral machine to be exhibited for the first time equipped with new gusset-type square heel and elastic-welt attachment.

Sees & Faber Co., Inc., Philadelphia. Booths 78, 79. Hosiery mill specialties and electrical tools. Featuring coursing pads and new improved leg-examining glass.

Singer Sewing Machine Co., New York. Booths 201-203, 236, 238. Featuring assortment of sewing machines specially developed for the knitwear trade mounted on Singer universal tabling with either electric-transmitter individual drive or two-shaft drive.

Smith, Drum & Co., Philadelphia. Booths 2-9. Hosiery dyeing and inspecting machines and skein dyeing machines in operation; skein-to-bobbin silk winder with constant-yarn-speed take-up roll.

Snia-Viscosa Co., New York. Booth 331. Rayon yarn and fabrics and garments made therefrom.

Sonoco Products Co., Hartsville, S. C. Booth 129. Paper cones, tubes, spools, and other paper carriers; cork-roll covering equipment; roll coverer and buffing machine. Featuring a single-head thread spool.

Southern Textile Machinery Co., Paducah, Ky. Booths 344-346. Wright & Sotco dial loopers; cylinder loopers for looping ribbed tops on half hose and cuffs on to golf hose.

E. M. Spencer, Philadelphia. Booth 4. Combed yarns, mercerized yarns, rayon and acetate combination yarns. Featuring Creptone and Sheenko yarns.

Spool Cotton Co., New York. Booth 279. Cotton and silk threads required by the knitting industry. Featuring fine sizes of needle threads for flatlock work, together with appropriate looper and covering threads; also a comprehensive line of seaming silk for hosiery.

Standard-Coosa-Thatcher Co., Chattanoga, Tenn. Booths 294, 321, 283, A. Durene yarns and threads.

Standard Trump Bros. Machine Co., New York. Booths 105-116. Machinery for men's and children's plain and fancy half-hose. Featuring model 80W machine to which has been added a shogging device for making shog-wrap hose; the model H two-feed needle reverse-plating machine with a new attachment for reverse plating in the extra feed as well as in the main feed; model H, 70-gage machine equipped with a new automatic double-sole cutter, working in conjunction with a double-sole evening attachment. Also Komet machines for men's and children's broad-ribbed hose.

Stetten & Fisher, Philadelphia. Booth 370. Steel equipment for hosiery mills, weaving mills and silk throwsters, representing Columbia Steel Equipment Co., Stanton Pressed Steel Co., W. J. McEmoyl & Co., Inc., Electric Service Supplies Co. Featuring a new moistening box for full-fashioned machines.

Alfred Suter, New York. Booth 54. Testing machines. Featuring new testing machines for silk, rayon, and hosiery; and a hosiery wear tester.

A. M. Tenney Associates, Inc., New York. Booth 352. Acetate yarns manufactured by Tennessee-Eastman Corp.

Textile Machine Works, Reading, Pa. Booths 267, 271, 285-289. Samples of

(Continued on page 137)

Three-Carrier Hosiery . . .

ITS PUBLICITY, ITS MANUFACTURE, ITS WASHBOARD, ITS FUTURE

By Morris Magnier
Superintendent, Ajax Hosiery Mills, Phoenixville and Pottstown, Pa.

THE full-fashioned hosiery industry is once more confronted with a new type of stocking—viz., the "ringless"—and it is interesting to note the overdose of publicity it is receiving. I say "overdose of publicity" because we have not yet forgotten the meteoric rise and equally sudden fall of the lace and mesh stockings, and it seems like only yesterday that every one was talking about what the "non-run" was going to do for the industry. Now, practically over night, everybody is enthusiastic about ringless hosiery, rushing to equip their machines with any type of attachment and set-up, forgetting, or rather not giving any consideration to, the results and their after-effects. Their main thought seems to be to rush the new hose to the market while the demand is good.

Too many manufacturers seem to forget that whenever the basic principle of knitting is changed, complications arise. Not so long ago some one evolved the idea of making a stocking "run-proof." This necessitated a change in the method of knitting that was then in vogue. We are all quite familiar with its results.

Now we are trying to make a stocking "shadow-proof" or "ringless." To do so we must do away with the old principle of using a single carrier for the main body of the stocking and in its place use three carriers. This is an entirely new departure from the old practice. It calls for new methods and attachments and brings up new problems. Unless precaution is taken, some one is going to have a severe case of headache before realizing what it is all about.

We know that the alternating attachment is made to balance the variations in the thickness of the silk thread. In the mechanical function of the attachment itself great improvement has been made lately, so that it is now possible to run 60 to 64 courses per minute without any fear of trouble. This improvement consists of a main friction box and friction-box slides, controlled and operated by cams and a ratchet mechanism for rotating the friction-box cams. The operation of them is positive and practically foolproof.

The question as to what carriers are to be controlled by this attachment depends on the type of machine; but whenever possible, carriers Nos. 1, 2, and 3 should be the ones selected. When this is the case, the cycle of operation is 1 to 3, 3 to 2, 2 to 1.

The operation is accomplished as follows: The friction-box slide is engaged with No. 1 carrier dog and the friction box is locked. Thus, when the machine is started, carrier No. 1 will be moved across to the left end of the knitting head. Through the action of the ratchet mechanism, the cams on the friction box will then cause the friction slide to be disengaged from carrier rod 1 and shifted to carrier rod 3. Carrier rod 3 will then be moved to the right of the knitting head; and in like manner, the friction-box cams will cause the friction slide to be shifted from rod 3 to rod 2. Rod 2 will be moved across to the left and the friction cams will cause the slide to be shifted back to rod 1, which will then be moved across to its original position, and the cycle of the friction-box cams will be completed.

It will be noted that carrier rod 1 is now back to the right, but rod 3 is also to the right, whereas in starting it was at the left. Rod 2 is at the left instead of at the right as it was at the start. In order to bring all carriers to their original position another cycle of the friction-box cams must be completed. One can readily see that by following this action throughout the knitting of the stocking, the main silk carriers are changed once every three courses, thereby better balancing the silk in case of unevenness.

The early cause of an excessive loss of production in the manufacturing of "ringless" was that when running over a certain speed the carriers would bounce, which necessitated reducing the normal speed of the machine. In order to eliminate this bouncing, there is on the market today a device called a "carrier-arresting" or "locking" device. This is used in connection with the alternating attachment and furnishes the means for positively holding each of the three main carriers and releasing them at the proper time and in the correct sequence. Such an attachment is very simple in its operation. This simplicity is very essential, as we find that today the full-fashioned hosiery machine is complicated enough to keep any one busy looking after its mechanical functions and adjustments without putting on any hit-or-miss attachments—that is, if we are to retain our normal production and efficiency of operation. Regardless of its mechanical set-up, the trouble does not end there, as too many manufacturers seem to think, but rather in the laying out of the carriers and cones and in the proper kind of silk and solution. Attention to these details is important, if we are going to minimize the possibility of the so-called "wash-board" effect. Careful planning is necessary even though it means added expense through extra time. The results achieved will more than repay this extra outlay.

For the boot of the stocking, as we have said, it is advisable to use Nos. 1, 2, and 3 carriers. This is recommended mainly if the use of a mercerized yarn for reinforcing the heel is contemplated Better results are obtained with these particular carriers because they are farther away from the reinforcing carriers, and hence permit better plating.

The next step in planning the manufacturing of "ringless" hosiery, and one which I consider very important, is the proper setting of the silk cones that are to be used for the boot and foot. This set-up must be planned so that it will give as uniform drag and tension as possible

from the time the silk yarn leaves each cone until it is fed into the needles. One must not forget, when speaking of drag and tension, that the angle a yarn is given will vary its drag and tension. Therefore, precaution must be taken when setting the silk cones that the angle of the yarn be uniform from the top of each cone to the water trough.

Continuing from the water trough, each yarn should be at a right angle through the tension rings and through the snappers. Care should be taken that all tension rings are of uniform weight, as this will vary the drag upon the silk. From the snappers to the carriers, a variation in the angle of the yarn does take place, but this can be minimized if the splash pan is done away with. This splash pan is sometimes used between the snappers and carrier rods. After the cones have been so set up, one must not lose sight of the proper attention that must be given to all passages of the silk yarn as it goes through felts, eyelets, carrier tubes, etc. All of them must be kept clean and free from any accumulation of dirt and gum.

After you have carefully planned the set-up in order to eliminate all possible unevenness of tension and in order to create a uniform drag on all yarn, you must then face the greatest problem of all—the variations in evenness between different silk cones.

There was a time when nearly every manufacturer of full-fashioned hosiery did his own backwinding. Consequently, it was possible between the supervisor of the knitting department and the foreman in charge of the winding department to keep a close check of each cone as it came off the winding machine.

Today, in order to economize, manufacturers find it to their advantage to use the cones direct as they come from the throwster. Of course, no one can really expect the throwster to be as particular with the tension of each of his spindles as the supervisor of a knitting department would be. That certainly is not in the wood. The throwster has several customers to take care of. He does not see the ultimate result of all his work. It is also economical for him to push his machines for production; and, as long as the appearance of the cone is not spoiled, no stops are made for tension adjustment unless absolutely necessary. The result is that the knitting department is confronted with the variations in tension between the so-called "hard" and "soft" cones.

This is the great problem in the manufacturing of "ringless" hosiery. It is one of the main causes for the washboard effect. It is, of course, almost equally serious in the knitting of any type of full-fashioned hosiery, as it creates uneven stockings, irregularity in the number of courses per inch, and poor foot matching. Having this handicap to face in knitting "ringless" hosiery, we must try to overcome it as much as possible; and, from my own experience, I make the following suggestions:

1. Use small cones of silk of about 4 oz. or less. Such cones are used faster and have less chance of drying out. It must be realized that the main silk cone is now being used about one-third as fast as previously.

2. When a cone runs out at a particular section, it is advisable to change the other two cones with it; otherwise, the condition of all three cones will not be alike. If small cones are used and put on the machine at the same time, you will find them running out fairly evenly, because if one silk thread breaks on a particular section the other two must also be cut off by the knitter.

3. Before issuing the cones to the knitters, the yarn handler should be instructed to select them for hardness or softness and to separate them into lots of three cones each, in order that all cones per section may be more nearly uniform.

The next difficulty with which we are faced is the proper solution to be used on the silk, and the proper humidification. The solution must be such that it will not degum the silk as it passes through the felts, snappers, and carrier tubes, as this will create a great deal of unevenness or washboard effect. The solution must, however, be able to absorb the moisture fast and uniformly, making the silk highly hygroscopic. Too much trouble is experienced with solutions which vary greatly with the change of temperature and humidity. This causes the silk in some cases to become too dry and sleazy; and in other cases, too wet. It also causes degumming of the silk, giving the stockings on the machine the appearance of shoe strings. The correct solution to be used must allow the silk to be knitted damp, at the same time retaining the full width of the stocking. Such solutions are to be found on the market today and are proving most satisfactory.

It is not my intention to give the impression that, after proper selection of the alternating attachment has been made and all the causes for uneven tension have been carefully eliminated, as far as humanly possible, any one will be able to make "ringless" hosiery absolutely free from washboard effect. Far be it from such! My contention is that by careful planning ahead, even at the cost of a few extra dollars, you can obtain a higher effciency of production with a minimum of washboard effect and produce a higher percentage of first-quality hosiery.

No one can deny the fact that the alternating-carrier attachment greatly reduces the ring or shadow effect caused by uneven silk denier, which is so common today. A "ringless" stocking is unquestionably clearer and finer; and as for the washboard effect, as already explained, it can be minimized to a certain degree, and in many cases it disappears entirely when on the leg. We cannot expect that imperfections in a raw material can be corrected by simply putting an extra attachment on the machine used to convert that raw material into a finished product. No doubt a certain amount of imperfection can be covered up or camouflaged; but other complications arise. The result is a greater cost in the manufacturing of the product. As long, however, as the public is willing to pay for the extra cost, well-made "ringless" hosiery will be a success. When the public stops paying, it will be a failure.

In any event, we shall always continue to learn and to improve. The result will be perfection in the quality of our work.

Seamless Is Changing . . .

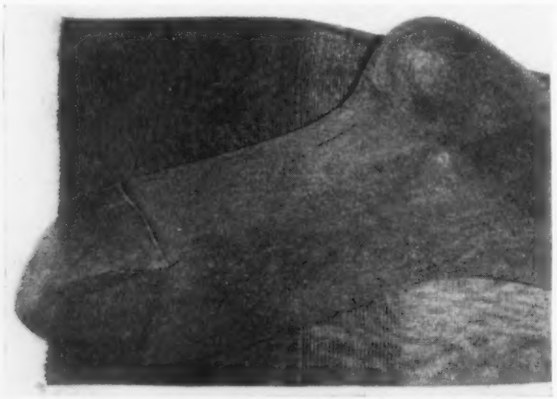
NEW QUALITY AND STYLE ARE EXPANDING ITS POTENTIAL MARKET

By H. E. Katzenmoyer
President, Fisher Hosiery Co., Reading, Pa.

SINCE 1930 we have witnessed a series of improvements that have effectively transformed women's seamless hosiery and elevated it to new standards of quality, style, and beauty.

First of these improvements was the finer gage. This fineness didn't develop over night, but was evolved when the machine man began to center his thought on the problem and finally worked out a machine that would accomplish the desired results—provided the needle man could develop finer needles, which he soon succeeded in doing. The new equipment made it possible for seamless mills to produce finer-gage hosiery—and 340-needle numbers came into being to compete in appearance and elasticity with fashioned hosiery.

Then came improvements to the foot, and more particularly to the heel. New types of heel were developed that would fit properly and wouldn't slip down in the foot. This marked a great advance in seamless hosiery



Courtesy of Scott & Williams, Inc.
The new square heel in women's seamless hose further improved to give additional fabric, and hence strength, at the gore line

because it provided style and fit that were never possible with earlier types of heels. These new heel improvements offer the advantage of the right-angle foot—something that everyone strives for in making seamless hosiery. They eliminate excess fabric over the instep by forming a larger heel pocket. The right-angle foot assures comfort, fit, and stylish appearance.

Jumping from the heel to the top of the stocking, we find real improvement here in the last few years. The introduction of the loose and tight course gives seamless an advantage which it never enjoyed before—plenty of stretch and elasticity. This feature makes the stocking conform easily to various types of legs and provides better fit and appearance.

With such outstanding improvements, what does the future hold in store for seamless hosiery?

It is our belief that seamless volume touched bottom in the spring of 1933, when fashioned goods were selling so low that the price differential was practically wiped out.

If we will face the facts, we must realize that this price differential is the key to greater seamless sales. As fashioned prices rise and are stabilized at higher levels, our opportunity grows greater. There is a very definite relationship between full-fashioned prices and seamless hosiery sales.

The day of the slip-shod product made only good enough to "get by" is gone, along with a lot of other evils that have no place in the "New Deal." With a very definite present-day trend toward better-quality merchandise, there would be no better way to "kill" seamless business than to offer for sale inferior merchandise.

Women today demand appearance, style, fit, comfort, and wear—in their hosiery—, and seamless manufacturers, with the improved equipment at their command, are able to embody every one of these advantages in the hosiery they produce.

Buyers and consumers alike, however, must be assured that all of this style, fit, and appearance will be retained in the hosiery after it has been worn and washed once or a dozen times.

There is no reason on earth why seamless hosiery that conforms to such high standards as these cannot be brought out of the basement on to the first floor of the department store, along with other quality merchandise.

It appears, also, that modern merchandising methods will play an important part in the promotion of this type of hosiery. Attractive packaging and displays and the building up of a trade name, backed by a reputation, will go a long way toward winning the confidence and good will of both store and consumer.

The potential market for seamless goods is rapidly expanding, due to the improved style and appearance of the product, and to the increased earning power of the laboring class throughout the nation, particularly in the South. To many of these people, silk hosiery has been an almost unknown luxury, but seamless now brings it within reach of their income.

Another vast market that again opens up to us as a result of changing conditions is the export field. Women throughout the world have one instinct in common—a love for beautiful things to wear. The average family income in many countries is so low that it doesn't permit extravagant spending for silk hosiery—but seamless will make it possible for these women to enjoy the luxury of silk stockings. Reciprocal tariffs and other plans now being discussed should make the exporting of seamless hosiery a profitable business.

Certainly seamless hosiery has a bright future ahead of it if manufacturers will firmly resolve to produce the kind of hosiery that women want—the kind that is made possible by recent machine improvements.

Courtesy of Hemphill Co.

Below, color within color in genuine wrap; above, one of intricate patterns produced by reverse plating on both feeds of two-feed machine

The Amazing Half Hose

By Charles F. Smith
Drexel (N.C.) Knitting Mills

INTRICACY OF ITS DESIGN IS STILL INCREASING

THERE is a story in circulation that in the early days of the nineteenth century the United States commissioner of patents resigned his position because, he insisted, everything that could be invented had been invented, human ingenuity had reached its limit, and therefore there was little or no future for him in the Patent Office.

The manufacture of novelty hose has occurred in the past in cycles; that is, novelty hose has become stylish to wear from time to time and the manufacturers have proceeded to the point where ingenuity in developing new patterning possibilities has for the time being been exhausted. It was felt in some circles even back as far as 1925 that the present vogue for novelty hose was only temporary and that it would not be long before the public would grow tired of seeing the same types of novelties and would revert once again to the wearing of staple merchandise almost exclusively. Subsequent years have disproved this belief in the limitations of half-hose design, just as time has disproved the belief of the commissioner of patents in the limitations of general ingenuity.

Full credit for the promoting and sustaining of the present cycle of novelty hose should be given to the machine builders and their development departments. We have seen since the early part of 1925, when it is generally believed the present cycle of novelty hose started, developments and refinements which far surpass those of previous years and which hold forth promise that the end is not yet in sight. Starting with horizontal stripes only, we have seen brought forth consecutively (1) plaids made with bent-back needles in combination with horizontal stripes and also floating stripes combined with horizontal stripes, (2) sinker reverse plating, (3) imitation wrap, (4) combinations embracing both imitation wrap and reverse plating, (5) the development and subsequent refinement of the two-feed machine, about which more later, and (6) genuine wraps.

Of all the types of novelty hose now being produced, the genuine wrap seems to hold the greatest promise for the future. This type of novelty has been produced by embroidery for many years, even during those times when staple hosiery has apparently been in vogue. Due to the fact that embroidered effects can be produced on this machine and that these effects can be presented to the public more economically than the actual embroidery work, it is logical to believe that this type of machine will far outlast the others which are being produced at the present time.

The refinements of the past year have centered mainly on machines of the genuine wrap-needle type. The mechanics for obtaining the genuine wrap have been simplified to some extent, but it is also possible now to produce what is known as color within color in wrap work. When machines of the wrap type were first presented, it was possible to incorporate only one color in the wrapping of a given panel of needles. Afterwards attachments were made available which enabled the manufacturer to feed to the same panel of needles as many as three different colors of wrap yarns in the same hose. This was more or less in the nature of a striping attachment and left for future development what has now been accomplished—namely, the feeding of two colors of yarn simultaneously to selected needles within a given panel without both yarns being fed to any one given needle. It is now possible practically to duplicate any effects which can possibly be produced by either machine or hand embroidery; and while we feel that this is the ultimate in panel-wrap refinement, we approach the future with an open mind. So much for the refinements of the past year or so in panel-wrap equipment.

Courtesy of Standard-Trump Bros.

Two patterns produced by the remarkably versatile method of shogging on individual-needle-wrap machines

The major development of this same period has been the introduction of a needle-wrap machine carrying many more feeds than any previous machine of similar

type. A recent refinement on this machine has been the development of mechanism which will permit the shogging of the feeds one needle at a time in either direction forward or backward a total distance of as many as fourteen needles from the point at which the shogging started. More amazing than the actual shogging itself is the fact that it is possible to build this machine in the finer gages. Until the present time it has been considered an impossibility, first, to apply individual-needle-wrapping mechanism to a revolving-cylinder machine and, secondly, to build a machine of this type even with a stationary cylinder in a finer gage than 200 needles. This has opened up an entirely new field for fancy hosiery of the genuine wrap type and seems to be the nearest approach to jacquarding that is possible. Here again, however, we are willing to approach the future with an open mind.

Another refinement of the period just passed has been the perfecting of a satisfactory method of splicing on two-feed machines. The two-feed type of novelty has appealed to many manufacturers in the past because of the fact that knitting two courses of fabric with every revolution of the machine affords a production gain of roughly 30%. Unsatisfactory results, however, were obtained generally due to the fact that, in the splicing of either the heel or ring toe, there was left a weak place in the fabric which looked like a hole and which as often as not gave trouble later in the manufacturing processes or in the wearing. The mechanical angle of this situation has been largely corrected. Another development on the two-feed machines, which is important to consider from the styling standpoint, is the fact that it is now possible to reverse plate on both feeds. Until recently this was possible only on one of the feeds, it being necessary to run a solid end of yarn in the second feed. Considerable versatility of design has been gained.

As the major developments recently in the half-hose styling field have been made on the genuine-wrap type of equipment, it seems to be worth while to devote a few remarks to the influence these developments may have on merchandising policies. In years passed new developments in novelties were first presented to the ultimate consumer by those mills selling the wholesale trade. The wholesaler was thus enabled to offer the retailer styles and effects unobtainable from the direct seller, and this tended to offset with the retailer the very influential factor of national advertising. Eventually sufficient pressure was put upon the direct seller by his retail trade to supply these same effects.

The situation, however, seems to have practically reversed itself in the last year or so. After the full force of the depression developed, the purchase of new equipment became less and less; and if any was purchased, it was mainly for the purpose of producing cheaper grades of hosiery. The wholesaler and retailer apparently sought to compete with the more economically situated chain and department stores and in general concentrated on merchandise in the lower price brackets, thereby leaving such business as was still left in the higher brackets to the direct seller. It is therefore to be expected that such new developments as may be brought out in the near future, as well as those developments of the preceding period, will first be presented to the consumer by the direct seller. It is further to be believed that eventually pressure will be put on the wholesaler to supply similar types, and it will be at that time that those mills catering to the wholesale trade will go in for the new equipment.

Hosiery

PREDICTING THEIR NUMBER

By Warren P. Seem

Julius Kayser & Co.

EXPERIENCED knitters know that not all bands, light or heavy, in hosiery are due to the unevenness of raw silk, as some may be due to a mixture of thread and twist, tight and loose knitting, and irregularly conditioned thread. Bands, due to unevenness, unraveled from a dark colored stocking (and the size determined by weighing 9-meter skeins) show that a deviation of 15% in size reveals a band in wearing. On light tan colors the band is only slightly visible, but on dark colors, it is quite visible and is classed as a second.

How can the number of seconds be predicted from the 9-meter composite test on raw silk? The predictability of the 9-meter composite evenness to hosiery seconds is dependent on six factors, as follows:

1. *Deviation from the thread diameter on all lengths of thread*—This is measured by weighing 250 9-meter skeins and computing the deviation into percentage by the theory of least squares.
2. *Deviation from the size level*—This is measured by weighing 25 2250-meter skeins and computing the deviation of the diameter of the size level into percentage by the theory of least squares.
3. *Composite evenness or degree*—The figure for composite degree is computed as the product of the percentage thread deviation, times the percentage size level deviation.

Seconds

FROM 9-METER COMPOSITE

TEST FOR RAW SILK

New semi-automatic 9-meter reeling machine and skein twister viewed from front and back

4. *Uniformity of evenness within a lot*—This is determined by dividing the test skeins of a lot into two units and computing the deviation on each unit separately.

5. *Evening-up factor*—When two or more threads are doubled, there is an evening-up of the fine and coarse. This is computed on the unevenness of the single threads for each thread of the same twist.

6. *Reflection and transmission of light*—The twisting of hosiery yarn from 3 turns low twist to 65 turns highly twisted crepe causes quite a change in the diameter and weight of the thread and gives various degrees of brightness and dullness in the dyed hosiery. The effect on the diameter and weight is computed mathematically. The effect of transmission and reflection of light is measured by a Reflectometer.

A common and serious error is constantly being made by averaging the evenness evaluation and expecting averages to predict the quality of the fabric or hosiery. What is the effect if five bales of a 10-bale lot are 72% and five bales are 81% composite evenness?

On a 4-thread, 20-turn, dark color, every stocking of the 72% would be full of visible bands, or 100% seconds. The five bales of 81% would yield about 15% of seconds due to bands. The average of the ten bales would be $(100 + 15) \div 2$, or $57\frac{1}{2}\%$ seconds. The average of the two units would be $(72 + 81) \div 2$, or 76%.

Suppose the 72% and 81% are mixed, using two threads of 72 and two threads of 81, or an average 76. What would be the results?

Every stocking would show a decided band and would be a second, as on a four thread the 72% does not even up sufficiently to overcome the decided bands. If testing were the end of things, or if it changed the evenness of the thread to that of the average of the test, there would then be relatively a more even fabric by a mixture of the two.

The accompanying table was compiled to show the evenness to be expected on multiple threads for various composite evenness percentages of the raw silk. The first column at the left gives the composite evenness of the raw silk; the other columns, numbered 2 to 10, represent the percentages of evenness on different threads. This difference between the raw composite and thread evenness is the evening-up factor.

How can bad matches between leg and foot, due to unevenness be predicted from the 9-meter test?

Bad matches can be predicted by reeling and weighing 25 2250-meter skeins, computing the deviation in diameter in percentage, and lining this up with the actual number of bad matches.

Can bad matches be predicted by 450-meter skeins and the deviation in size level computed on that length?

No, because it is too short in length constantly to indicate a size level. A 13/15-den. silk is reeled from five to six cocoons that vary in size 40% from beginning to end. The average length of useful filament is about 500 meters. Changes in size occur when one or more of the cocoon filaments break or run bare and when fresh cocoons are added. When reeling a 450-meter skein to determine the denier size, one approaches close to the length of average cocoon changes; and when weighing a 450-meter skein, one gets the average size within that length; but that does not indicate what the next 450-length will be.

The standard sizing test consists of taking 200 450-meter sizing skeins; and while repeated tests on that number show a constant size level, extensive application of the deviation per denier to long lengths of uneven thread in hosiery and bad matches between leg and foot do not show consistent relations, indicating 450 meters is not a proper unit of length upon which to compute the deviation in size.

To support this finding, the following information is given: If different sets of 32 450-denier sizing skeins each be weighed and averaged, they may vary 13% in average size. If different sets of 64 each be used, then one may expect variations of $6\frac{3}{4}\%$. If a 450-meter sizing be divided into 50 9-meter skeins and 20 sets on the same silk compared, the variation in evenness is found to be from 1 to 29%. but if one reels 20 sets consisting of 250 9-meter skeins, then the variation is reduced to an average of 0.74%.

To determine the deviation in size level in one or more bales requires 40 2250-meter skeins. The reason for requiring as many skeins from one bale as from ten is that a bale is the product of one girl in about 70 days or, generally speaking, 70 girls, in 1 day. To get the size level of each girl's reeling in the bale, at least 40 skeins are required. As the same number of girls generally participate in reeling more than one bale, the number of skeins required of a lot are the same on 1- as on 5- or 10-bale lots.

The grading of unevenness or bands in hosiery has always been just as perplexing a task as that of grading the evenness of raw silk. This has been greatly simplified with a grading cabinent based on a clear-to-wearing standard on such parts of the stocking as are outerwear and passing minor bands on parts that are underwear. (Tests to be demonstrated at Philadelphia.)

Evenness to be expected on multiple threads

Composite Evenness Raw Silk %	Multiple Threads								
	2	3	4	5	6	7	8	9	10
90	92.8	94.0	94.8	95.3	95.7	96.0	96.3	96.5	96.6
85	89.1	90.8	92.0	92.8	93.4	93.8	94.2	94.5	94.8
80	85.2	87.4	89.0	90.0	90.8	91.5	91.9	92.4	92.8
75	81.2	83.8	85.8	87.1	88.1	88.9	89.6	90.1	90.6
70	77.0	80.0	82.0	84.0	85.2	86.2	86.9	87.6	88.2
65	72.8	76.3	79.0	81.8	82.2	83.3	84.2	84.5	85.6
60	68.4	72.2	75.2	77.3	78.8	80.1	81.1	82.0	82.8
55	63.7	67.9	71.2	73.4	75.1	76.6	77.7	78.8	79.6
50	59.0	63.4	66.9	69.3	71.2	72.8	74.1	75.2	76.2

NOVELTY AND DISTINCTION MARK NEWEST

Knitwear Styles

***Suppleness of mold is attained** to an unusual degree in this new Jantzen bathing-suit made from Bemberg yarn and Lastex. This suit illustrates the possibilities of synthetic yarn in the utility swimsuit field. Photo shows Lynn Browning, junior star, Warner Bros., First National Pictures.*

THE new mood of optimism prevalent throughout industry finds abundant expression in the summer and fall offerings of knit goods mills. Style trends are interpreted with originality and distinction, and the result is an array of merchandise well calculated to defrost the most icy purse-strings of the ultimate consumer. In some respects the picture has a feast-or-famine air, as certain branches are conspicuous for the beauty, novelty and variety of their lines, while others appear satisfied to maintain the status quo. On the whole, however, mechanical progress and the art sense of the designer have combined to give fresh vitality to merchandise in all three major divisions.

The "ringless" development, of course, dominates the full-fashioned hosiery outlook. The innovation is coming to assume increasingly wide significance. Indeed, the last word is that the development may be applied eventually to seamless hosiery as well.

"Ringless" to the Fore

Full-fashioned hosiery minus objectionable shadows, now is being manufactured by a large number of mills, and successful retail movement at prices up to $1.35 is reported. However, progress is impeded by four difficulties: First, the high manufacturing cost, necessitating a high selling price; second, the trend among some knitters to offset this cost by using inferior silk thus cheapening the line; third, the practice of shoe chains to use "ringless" hosiery as a bait for shoe sales, and to sell these stockings at 89c, a below-cost price; and fourth, the objectionable "wash-board" effect in some of the new hose.

In merchandising the new hosiery line, manufacturers lean more and more to elimination of the word "ringless"; it is recognized that this term could prove a boomerang if it should come to be applied indiscriminately to all quality ranges. Mills have solved this problem by stressing clarity and transparency in their promotion.

Another new aspect is the increasing use of Lastex in hosiery. The latest development is to employ this yarn to give flexibility to the knee, an added feature which is attracting favorable attention. The outlook in hosiery colors is uncertain, due to the new trend toward blue, and the market is speculating as to whether this vogue will cut down demand for the usual summer variations of beige. Blue assumed unusual importance in hosiery this spring, and promises to continue popular in the lighter shades for some months.

An interesting exemplification of the new "flawless hosiery" is offered in these Mir-O-Kleer stockings by Julius Kayser & Co. Transparency and the absence of shadows are outstanding characteristics. These traits have been made possible through use of the new "ringless" attachment on hosiery machines. The hosiery is featured in the sheerest styles where its uniformity shows to best advantage.

The increased call for seamless hosiery has encouraged mills to improve this product in various ways. The square heel which was well received last year, now has been strengthened by adding fabric that gives more weight and body to the gore line. The point of this improvement is that it extends the heavy fabric under the

heel where wearing strain is greatest. Style, no less than utility, is utilized to increase the sales-appeal of these lines; features include lace tops and colored picots.

Perhaps the most notable hosiery developments, however, are found in the half hose field. Here, thanks to machine improvements, designs are more varied and interesting than they have been in some years. Color is highlighted, and indeed the proverbial masculine conservatism seems to have been definitely discarded. In summer half-hose, patterns are the rule, with checks gaining over stripes. Bright tans and blues are the newest colors, and mills look for an unusually active call for pastels during summer.

Underwear Stresses Simplicity

As though to offset the esthetic trend in men's hosiery, women's underwear is becoming more masculine. Simplicity of design is the keynote. Garments are briefer and more form-fitting. Few of the ornamental feminine models are offered. Lastex is used more widely than last year, both in underwear and foundation garments. The simplicity note is evident in the whole range of women's underwear but especially in bandeaux and panties. In accord with this trend, color has been subdued, the quieter shades dominating.

Rabbit hair combined with wool or silk is deftly used in the smartest of the new half-hose and neckwear. Sock shown above has gray base with while stripe; they are representative of a new line offered by Westminster, Ltd. Necktie has wide stripe of dark blue with narrow stripes of light blue and white, the latter portion being of silk. Necktie by courtesy of Bachrach Co.

The new lines of men's knitted underwear follow standardized constructions and designs of other years. Conceding that ribbed merchandise is essentially a staple, the question arises whether greater stress could not be placed on the styling of men's lightweights. Indeed, these mills could well take a leaf out of the book of the woven underwear manufacturers. The latter group has been very successful in increasing sales of men's garments by developing new designs and color combinations.

Leather and wool fabric are intriguingly combined in this Jantzen sweater. The fabric body of the garment is in gray plaid. The suede leather front which is part of the garment and not superimposed thereon, widens at the waist line to the full breadth of the front. It is fastened in the front center with a zipper.

In the outerwear division style developments this year are especially striking. One notable feature is the trend toward increased use of synthetic yarn in bathing-suits and this is viewed as likely to be a major feature next year. The synthetic yarns, which hitherto have been restricted mainly to beachwear or ultra-ornamental swimsuits, now are used in utility swimsuits. The new line is smart and practicable and has an interesting form-

Undershirt of mercerized cotton featuring the wider Swiss rib which is enjoying outstanding popularity among men this season. Courtesy of Oneita Knitting Mills.

On left: Squared pattern has black borders. On right: Artistic vertical stripe is achieved by unusual rib construction, floats on the inside holding the rib in place even when under tension. Courtesy Westminster, Ltd., distributors for Nolde & Horst.

Chardonize enters the glove field. These interesting gauntlets with flowing cuffs are made of Tubize Chatillon yarns. The body of the glove is close mesh with ornamentation on back; the cuffs are knitted with a more widely spaced decorative stitch.

fitting effect due to the use of Lastex. The brassiere-and-shorts for women and trunks only for men are increasing in popularity and manufacturers believe these lines may become best sellers in 1935.

Diversified use of the check design lends new interest to knitted dresses. The highlights among knitwear novelties are the new striped scarfs and blouses, both of which have been strongly endorsed by style authorities. Novelties of unusual textures are attracting interest and knitted neckties featuring rabbit hair are an example.

New squared design treatment lends distinction to this three-piece suit made of Chardonize yarn by Bradley Knitting Mills. This smart daytime outfit is of de-lustered yarn, with a surface resembling boucle but lighter. Fancy stitch effects are combined with plain and rib.

Once again womanhood returns to lacy effects. This time it is reflected in a bandeau-and-pantie two-piece outfit by Julius Kayser & Co. The body of each garment is knit of Lastex in a distinctive flower-like design; Lastex satin is used for trim. The outfit's name is "Pantasy."

Added elasticity is achieved through the two-way stretch in a new "Foundette" model by Munsingwear. This is a tissue-weight full-length foundation garment with lace uplift bandeau; Lastex is used both in the body of the garment and in the shoulder straps.

The new popular lacy effect is deftly exploited in this frill boucle suit by Marinette Knitting Mills. The coat has a high ribbed crew neck and buttons down the front; the top yoke is in self lacy vertical stripe pattern. Femininity's trend to laciness is recognized in the scarf.

Knit-Underwear Defects

BEGINNING A SERIES OF ARTICLES ON THEIR ELIMINATION

By Louis G. Goldenberg

◆ *Imperfections in rayon underwear fabric are not all the fault of the knitter or the finisher. In many cases the basic trouble lies in the condition of the yarn or in the manner in which it has been wound. Consequently Mr. Goldenberg, in beginning his discussion of fabric defects, devotes his first article to the important processes which precede the knitting proper.*

IN order to remedy imperfections or damages in circular spring-needle knitted rayon underwear fabrics, it is necessary first to know the causes of these imperfections and then to be able to recognize the cause by the appearance of the imperfections. In general these causes may be classified as originating in (1) yarn, (2) winding, (3) knitting machine, (4) operator, (5) type of fabric, (6) finishing, or (7) policy of mill.

1. Yarn

Condition of yarn. Not so long ago it was a pretty general practice to blame all knitting-room ills on the yarn. While it is true that the better the yarn, the easier it is to process it into knitted cloth with a minimum of imperfections, every yarn deserves careful handling in the winding, knitting, and finishing operations.

Of recent years all makes of rayon yarns have been so improved that it is almost a fallacy to blame any of the difficulties encountered in knitting on the quality of the yarn. Yarn that is purchased on cones has been prepared for knitting with the proper oil and moisture content. One of the most important functions of the knitting department is to see that this condition of the yarn is maintained.

One of the greatest causes of holes attributed to the yarn is not the inferior quality of the yarn but the improper conditioning or the storing, exposing, and knitting of the yarn in improperly conditioned air. Rayon is a very hygroscopic material, varying in its moisture content according to the condition of the surrounding atmosphere. If the yarn is permitted to dry, holes are very likely to appear in the cloth.

The difficulty met when starting up on a Monday morning is due not so much to the equipment being cold as to the drying of the cones left on the machines over the week-end.

That this is so can be proved very simply by starting up a cold machine with a set of fresh cones and comparing results.

If several knitting machines start cutting holes simultaneously, it is most likely due to the condition of the yarn. It may be the yarn from a particular case or yarn that has been unduly exposed to dry air.

2. Winding

It has been repeatedly said that good winding is 90% of good knitting. This holds true for good yarn as well as for poor yarn. Good yarn can be made inferior by poor winding, while inferior yarn can be greatly improved by good winding.

Humidity control in winding. It is of the utmost importance that the winding should be done under proper atmospheric conditions. Lack of air-conditioning in the winding room may result in an excessive amount of holes in knitting whose origin it is difficult to trace if one is unfamiliar with the physical characteristics of rayon in relation to humidity.

A concrete example of this is the case of an underwear-fabric knitting mill which does its own winding from skeins to bottle bobbins. At one time the mill became troubled with holes being cut in knitting. As the number of these holes increased and became excessive, the knitting-machine adjustments were checked and all worn porcelain guides were replaced. A representative of the yarn company assured the mill that the same yarn was being used successfully in other mills. The oil used to lubricate the yarn in the winding room was chemically tested and found to be harmless. Tests were made with soft-wound bobbins and hard-wound bobbins, but nothing seemed to have any marked effect upon the number of holes that were being cut all over the knitting room.

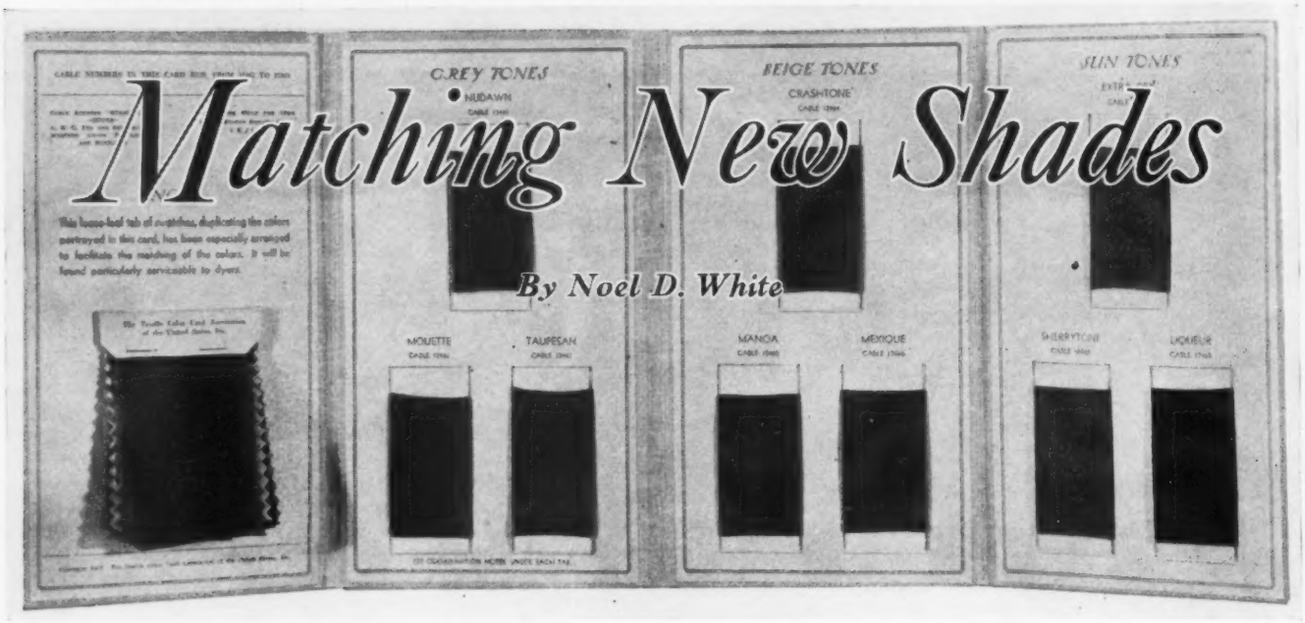
One peculiarity of the trouble was that in nearly every case the hole was either on a knot or there was a knot in the same course within 2 or 3 in. of the hole. One theory was advanced that for some unknown reason the yarn at the beginning of the skeins was weak, and therefore the girls were instructed to pull off several yards of yarn from the beginning of each skein before tying on—without success.

The solution of the problem lay in the fact that winding and knitting were both being done without any humidity control and also that rayon yarn elongates when moistened. The dampness of the girl operators' hands was quickly absorbed by the yarn where it was held while being tied, and the yarn became elongated at that point. In laying the knot properly on the outside of the bobbin a certain amount of tension was applied, fixing the yarn, at and near the knot, in an elongated position on the bobbin. As soon as the damp spot dried and contracted, it developed tension, so that practically all the elasticity was removed from the yarn where it had previously been dampened and elongated, causing weak, brittle spots at or near the knots. An installation of humidifiers removed the cause of the trouble.

Density of package. A package of wound yarn should be dense enough to give but slightly when compressed in the hand. A soft package may result in sloughing-off or tangling of the yarn, whereas a package that is too hard usually runs jerky in knitting. Imperfections due to either of the above causes are usually in the form of press-offs and cause excessive stoppage of the machines. An experienced operator readily recognizes these defects and their causes.

Broken Filaments. Excessive tension, rough guides, or too close a setting of the clearer knives in winding may result in broken filaments, causing weak spots in the yarn and subsequent holes in knitting. This condition is usually traceable back to the winding by a fuzzy appearance of the yarn package and by the sliding back and bunching up of the broken filaments at the yarn guides on the knitting machine. A hole caused by broken filaments usually shows a fine line on either one or both sides of it.

METTLE OF HOSIERY DYER SHOWN BY SKILL IN



Matching New Shades

By Noel D. White

TWICE a year—spring and fall—the Textile Color Card Association of the United States, in cooperation with the National Association of Hosiery Manufacturers, issues a hosiery color card. With the appearance of each new color card, the hosiery dyer is called upon to match on his company's products the shades which have been selected as standards for the coming season. How to make the matching of these new seasonal shades something less nerve-racking than a nightmare is the purpose of this article.

The swatches sent out by the Color Card Association are composed of one fiber only. To these silk swatches the dyer is expected to match hosiery containing two or more fibers, each of which necessitates the use of dyestuffs different from those required by the other fibers. Under these conditions, a perfect match—if such a thing is possible—is very difficult to obtain.

Human Eye the Only Guide

The human eye is the only guide to matching shades; and no two people can see a shade exactly the same. Again, under different light conditions a given shade will differ in appearance to the same observer. It is not surprising, therefore, that hosiery dyed in two different mills to the same standards will vary considerably in shade.

The first rule to be observed is to give one competent man the responsibility and authority for matching all new shades. This man should also be responsible for matching the shades of all hosiery which leaves the dyehouse. The dyer will soon learn how this man sees a shade, and will be relieved of the uncertainty as to how a match left to himself will be received when—as is the case in some mills—it is passed on by the boss of the boarding room, the forewoman in charge of finishing, or almost anyone else who happens to be handy.

The next rule to follow is to stick to a shade once it has been approved as satisfactory. In one plant with which the writer is familiar, the procedure followed at one time was as follows: When the new color card was received, two pairs of hosiery of the mill's best grade were dyed to each new shade; after the match was approved by the manager of the mill, additional samples were dyed; and a sample of each shade was sent to the salesmen in various territories. On one occasion samples dyed to a light-olive shade were mailed to each of the salesmen. From the West the salesmen forwarded samples from rival concerns. From the East samples came in showing what other concerns sold under the same name. Every time a new edition of the shade was received, the dyer had to rematch to that shade. One day, before leaving on a business trip, the manager brought to the dyer the latest arrival among the competitive samples and told him to match to that and to stick to it until his return. Two days later the manager telegraphed to the dyer as follows: "Our best customers state present shade wrong. Match to our original sample." When the manager returned to the mill he told the dyer that he was convinced it is impossible to match shades to satisfy customers in the North, East, South and West. Therefore, regardless of what other mills put out, he would stick to his original shades. This policy was adopted; and the mill has gained the reputation of being a leader, not a follower.

The third rule to be observed is to make certain that matching is carried out under proper lighting. Some people attempt to match shades on hosiery in a black room or compartment with a north window. This practice is entirely wrong. A black wall or ceiling will absorb the light from the window, reducing the visibility to a very large extent. Even on a bright day, the light obtained from 9 a.m. to 2 p.m. will be diminished; and later in the afternoon of the same day, the light will be still further impaired. On a cloudy day there will be a poor, deficient light to match by the whole day long.

Both Daylight and Artificial Light

When matching to new samples, and the dyes used on the samples are unknown, the dyer should match in both daylight and artificial light. This enables him to select dyestuffs which have the same characteristics as those used on the sample and which give dyeings that will

match the shade of the sample both in daylight and artificial light. The dyer does not know in what kind of light his customer will match the goods. Dyeings will look the same if examined under lights of the same intensity, etc., wherever they may be matched; but will appear totally different if examined under other light conditions.

When the same formula is used for dyeing a repeat order as for the original, there is hardly ever any difference in shade; but when a new shade is being matched, great care is necessary in the selection of the dyes. The experienced dyer by looking at the shade under both artificial light and daylight will know approximately what dyestuffs to use. When the match is as near as possible under both lights, it will remain a match under normal conditions of light anywhere and at any time of the day.

Matching by artificial light should be carried out in a black room without windows and lighted by gas or, preferably, electricity. Daylight matching should be carried out in a room painted a dull white with a window facing the north. For matching after dark, use one of the special "daylight" lamps made especially for color matching.

With these three fundamental rules in mind, we can now turn our attention to details of the color matching procedure. When the color cards arrive, the dyer should first compare the new season's shades with similar shades which have been in vogue in the past. He probably will find that some of the new shades differ only slightly from those of previous years. In this case, by making slight modifications in established formulas, the dyer will be able to match the new shades without difficulty. Many of the new shades, however, may differ materially from any which have appeared on earlier color cards, or have been in vogue previously; and in this event, the dyer will find it necessary to develop entirely new formulas. It is the matching of these unfamiliar shades that shows the dyer's mettle.

Several of the larger dyestuff manufacturers issue formulas for reproducing with their products the shades given in the seasonal color cards. These formulas give the dyer some idea of what dyestuffs to use and the amount of each to be employed. As a rule, however, these formulas have been worked out only on a laboratory scale and for one style of silk and mercerized cotton hosiery. They are an aid to the dyer, but are not substitutes for knowledge and experience. That is, the formulas always must be modified to meet conditions in any given dyehouse.

Factors for Dyer's Consideration

Among the factors which the dyer must consider are the following: (1) material to be dyed; (2) method of dyeing; (3) quality of water available; and (4) properties of the dyestuffs.

As regards the material to be dyed, for instance, it is obvious that a formula which will produce a given shade on a lot of sheer, all-silk hosiery will not give the same shade on a lot of service-weight silk hosiery with cotton tops, heels, and toes. The following example gives an idea as to the difference in the formulas required to produce the same shade of Gun Metal on two styles of hosiery dyed by two-bath, acetic acid method:

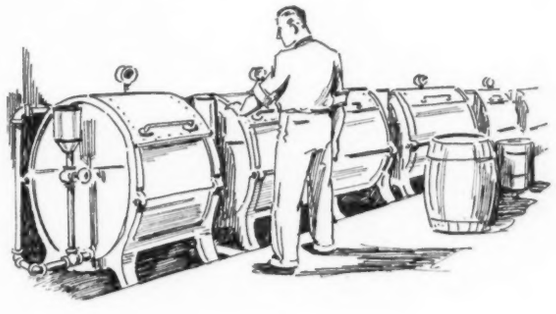
	Service Weight Silk and Mercerized Cotton	All-Silk Cotton Seam and Loop
Direct Fast Gray M	0.500%	0.340%
Direct Brown M	0.100%	0.065%
Trisulphon Brown B	0.050%	0.026%
Neutral Gray GG	0.320%	0.470%
Neutral Red WH	0.050%	0.050%
Fast Silk Brown K	0.080%	0.120%
Acetic Acid	2.000%	2.000%
Turkey Red Oil	1.000%	1.000%
Glauber Salt	20.000%	20.000%

The variation in the formulas required to produce the same shade of Crashtone on the same style of silk hosiery with cotton seam, loop and plated foot when dyed by different methods is illustrated by the following example:

	One-Bath Method	Two-Bath Method	Two-Bath Acetic Acid Method
Diphenyl Fast Brown SL	0.100%	0.100%	.....
Diphenyl Fast Yellow GA	0.020%	0.020%	.....
Direct Gray M	0.005%	0.005%	.....
Fast Silk Gray 4B	0.095%	0.060%	.....
Fast Silk Brown R	0.180%	0.150%	.....
Fast Silk Yellow G	0.160%	0.120%	.....
Trisulphon Brown B	.....	.....	0.045%
Erie Catechine 3B	.....	.....	0.030%
Neutral Gray GG	.....	.....	0.150%
Neutral Red WH	.....	.....	0.040%
Xylene Brown AG	.....	.....	0.110%
Glauber Salt	10.000%	10.000%	10.000%
Boil Off Oil	25.000%	.....	.....
Acetic Acid	.....	.....	2.000%

Still further modifications in formulas are necessary when the split-bath method is employed, when soap is used instead of boil-off oil, or when other changes are made in the dyeing procedure. Again, no one de-gumming method will prove satisfactory under all conditions. In the example given above, for instance, 25% of boil-off oil was specified. This admittedly is a large percentage; but was necessary in the particular mill where this formula was developed. Under different conditions a smaller amount of boil-off oil or soap might prove sufficient.

Usually the first attempt to match a new shade is made in the laboratory on a sample lot of two stockings. It should be pointed out here that as few dyestuffs as possible should be employed for matching any given shade. Also, the dyer should be familiar with all the properties of the dyes he is using. If the one-bath method is to be employed, a typical procedure is as follows: A solution of soap or boil-off oil is made in a dye pot or in a sample dyeing machine; the dyestuffs, weighed out according to a tentative formula and dissolved in boiling water, are added, the goods entered and worked for 30 min. at the boil; glauber salt is added; and dyeing continued for another 30 min. The samples are now rinsed, dried, and compared with the standard to which they are to be matched. If the shade is not correct, and it is necessary to make one or more additions to the bath to bring the goods to the correct shade, a record of these additions is kept. When the desired shade is obtained, the exact amount of each dyestuff used is calculated and another trial dyeing made.

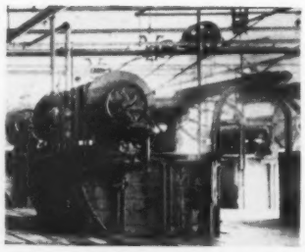


Until a formula is found which gives satisfactory results in the laboratory, there should be no attempt to dye a lot of goods in the mill. When such formula has been evolved, the amount of each dyestuff is known, and little difficulty will be experienced in matching shades in the dyehouse.

Processing Knit Goods

MANY RECENT DEVELOPMENTS DUE TO INCREASED USE OF RAYON

IN recent years marked progress has been made in the processing of knitted underwear and outerwear fabrics. This is particularly true as regards the bleaching, dyeing, and finishing of circular knit goods made from rayon or other synthetic yarns. At the same time, improved methods and equipment have also become available for finishing nearly all types of knit goods.



In the endeavor to lower the cost of processing circular-knit rayon fabrics, a number of plants have experimented with the single-bath method of scouring and dyeing. However, the presence of a large amount of oil in these fabrics has militated against this method. Even when the two-bath method is employed, it is sometimes difficult to remove all of the lubricant from the goods. For this reason, the use of a solvent in the scouring bath is now general practice; and a number of compounds have been developed for this purpose.

Bleaching of rayon knit goods—either for the production of a full bleach for white goods, or a three-quarters bleach on fabrics which are to be dyed—is ordinarily carried out with sodium hypochlorite or with peroxide. For many years it has been the custom in a few finishing plants to bleach cotton voiles and certain other constructions with a hypochlorite solution maintained at a comparatively high temperature. More recently this method has been tried out on rayon knit goods. The procedure, in brief, consists of treating the goods for about 20 min. at a temperature of 180° F. in a solution of sodium hypochlorite made strongly alkaline with soda ash. This method, although apparently dangerous, has given satisfactory results when carried out under close control.

The sulphonated fatty alcohols have invaded the knit-goods dyehouse; and are being employed for various purposes. One of the more recent applications has been in finishing rayon knit goods to give a soft full handle to the fabric and to prevent slipping.

Within the last year or two considerable improvement has been made in equipment for scouring and dyeing knit goods, one of the latest developments being a machine which enables scouring, fulling, and dyeing to be carried out consecutively in one piece of equipment. As is the case with other types of dye kettles introduced recently, this machine is of corrosion-resisting construction throughout.

About four years ago we began to witness some radical innovations in finishing equipment for tubular-knit fabrics; and since then several new types of machines have been introduced. One of the first of these units to be brought out subjects the fabric to a thorough sponging, shrinks it, puts on the finish by pressing the goods under hot paper, and delivers a finished package. This machine is suitable for handling fabrics for bathing suits and dresses, but is of particular interest to the manufacturers of sweaters knitted from dyed yarn, since it is designed to duplicate the hand and appearance of piece-dyed fabrics.

A second type of equipment is a vertical drying, steaming, and finishing machine with a hot metal dome over which the fabric is drawn. Dry steam is ejected from lower part of the dome and forced through the fabric. After steaming, the goods immediately come in contact with the upper part of the hot dome, thus setting the fabric in the original dimension as knitted, or shrunk or stretched, as desired.

Some three years ago a new type of extractor for tubular knit goods was made available, and a few months later a wet finishing machine was brought out. In each of these machines was incorporated the so-called propeller-spreader principle of opening the fabric to width and propelling it through the machine. More recently this principle has been embodied in a machine which wet processes, extracts, dries, finishes, conditions, and measures various types of tubular knit goods in one continuous operation.

There have been many other improvements in finishing equipment; and the purpose in singling out these few machines is not so much to call attention to any particular type, as to show the lines along which progress has been made and—more particularly—to emphasize the advantages which the modernized plant has over one which has not kept abreast of the times.

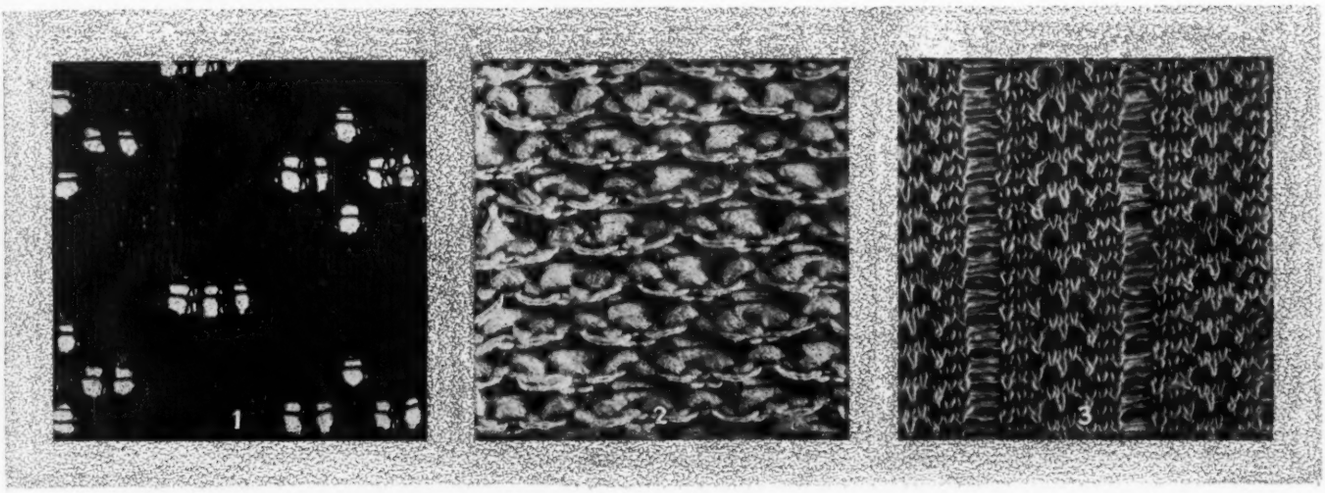
Two phases of plant engineering in which noteworthy advances have been made are in the purification of process water and in the disposal of waste liquors. The most recest innovation in the treatment of water is the use of activated-carbon filters for removing the objectionable aromatic odor due to algæ growths. These, in combination with sand filters and zeolite softeners, were installed in a well-known rayon knitting plant and have proved to be an important factor in enabling this mill to manufacture a line of finished garments of the highest quality.

Satisfactory disposal of scouring and dyehouse wates was accomplished by another manufacturer of rayon knit goods by the installation of a chemical-treatment tank. Two reservoirs were built—one for scouring waste; and the other, for dyehouse waste. From these reservoirs the mill waste is fed into the sewer in proportion to the sewage flow. No treatment of dyehouse waste is necessary at the mill; that portion of the scouring liquor which is in excess of 6% of the total town sewage is treated with 30 grains of ferrous sulphate and 36 grains of lime to 1 gal. of scouring liquor.

Outerwear Fabrics . . .

MESH PATTERNS AND PLUSH EFFECTS AMONG CURRENT TYPES

By Leslie Miner



A LARGE number of our knitted outerwear fabrics today are mixtures. That is, they contain cotton and wool, rayon and cotton, rayon and wool, silk and rayon, or some other combination. Rayon is being used extensively to brighten the apparance of cotton or wool fabrics and often to give them the appearance of higher quality. Consequently rayon cannot be considered as a competitor of cotton and wool, as it is helping to build up certain fabrics containing the latter fibers which otherwise would have little appeal to the consumer.

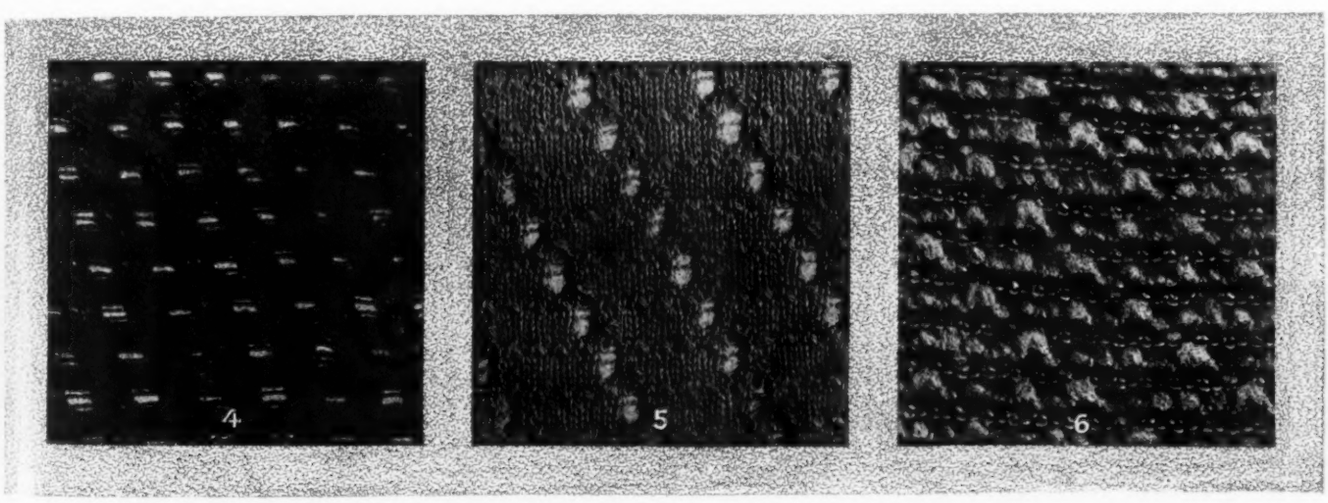
Nevertheless, it should be strongly emphasized that cotton alone is holding its own in knitted outerwear fabrics, and many of the samples which I show on these pages are entirely of cotton. Some of them could be reproduced in other yarns, and such effects in silk and wool particularly will be worn in considerable quantities this spring. Openwork fabrics especially will prove to be a familiar sight this season, and patterns along the lines of those shown as numbers 1 to 4 inclusive will be found in three-piece suits.

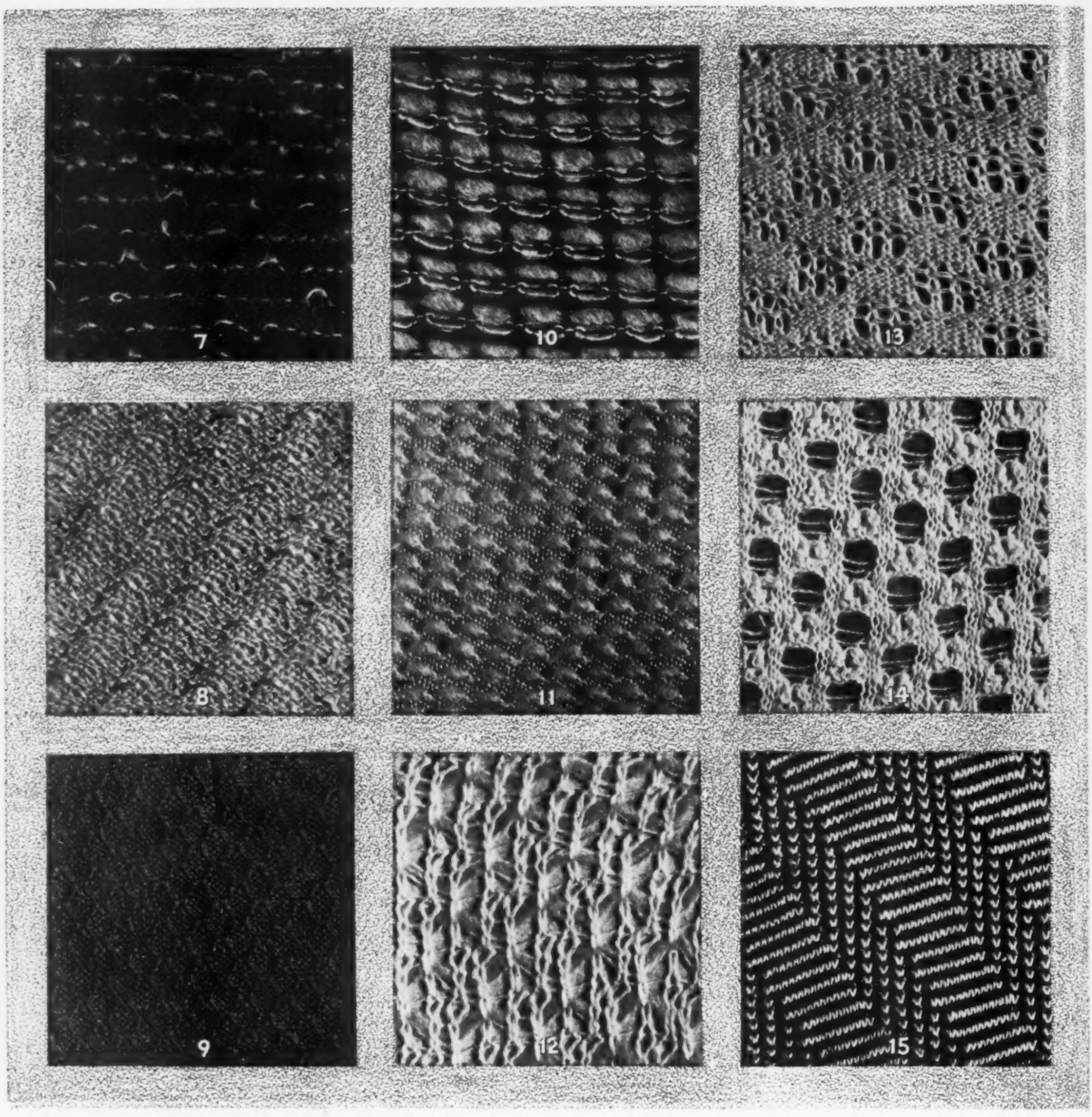
Constructions

1. *Drop-stitch suiting.* 35-in. cylinder, 7 feeds including 1 blank (that is, with no yarn), 18 gage, 12 cut, 6 ends of blue 30/2 cotton, 50 stitches per foot of the yarn.

2. *Openwork for suits and blouses.* 30-in. cylinder, 7 feeds including 1 blank, 18 gage, 12 cut, 6 ends of blue and white 30/2 cotton, 1 end of white 5-hank roving for plush effect, 5 plush stripes per inch under stitch glass.

3. *Lace pattern for skirts and coats,* to be





used with a more open pattern for blouses. 35-in. cylinder, 6 feeds of 14/1 cotton alternating red and white, 1 end of 10/1 cotton for slight plush effect bound in with cut presser, 1 feed blank, 18 gage, 12 cut, 48 stitches per foot of yarn.

4. *Drop stitch for dresses and blouses.* 28-in. cylinder, 7 feeds (1 blank), 6 ends of 30/2 cotton on face, 5-hank roving for plush effect on 1 feed, all brown, 18 gage, 12 cut, 5 plush stripes per inch.

5. *Drop stitch for skirts and coats,* to be used with blouses of white. 35-in. cylinder, 7 feeds (1 blank), 6 ends of 30/2 cotton, 1 plush end of 1/15 worsted, all green, 18 gage, 12 cut, 5 plush stripes per inch.

6. *Plush pattern for skirts and coats,* to be used with another openwork pattern for blouses. 28-in. cylinder, 6 feeds with plush wheel on 1, blue 30/2 cotton on face, white 5-hank roving for plush effect, 18 gage, 12 cut, 5 plush stripes per inch, 62 stitches per foot of yarn.

7. *Cut-presser pattern for skirts and coats,* 35-in. cylinder, 7 feeds with plush wheel on 1, 18 gage, 12 cut, 7 ends of maroon 30/2 cotton on face, 1 end of white 1/15 worsted for plush effect, 62 stitches per foot of yarn.

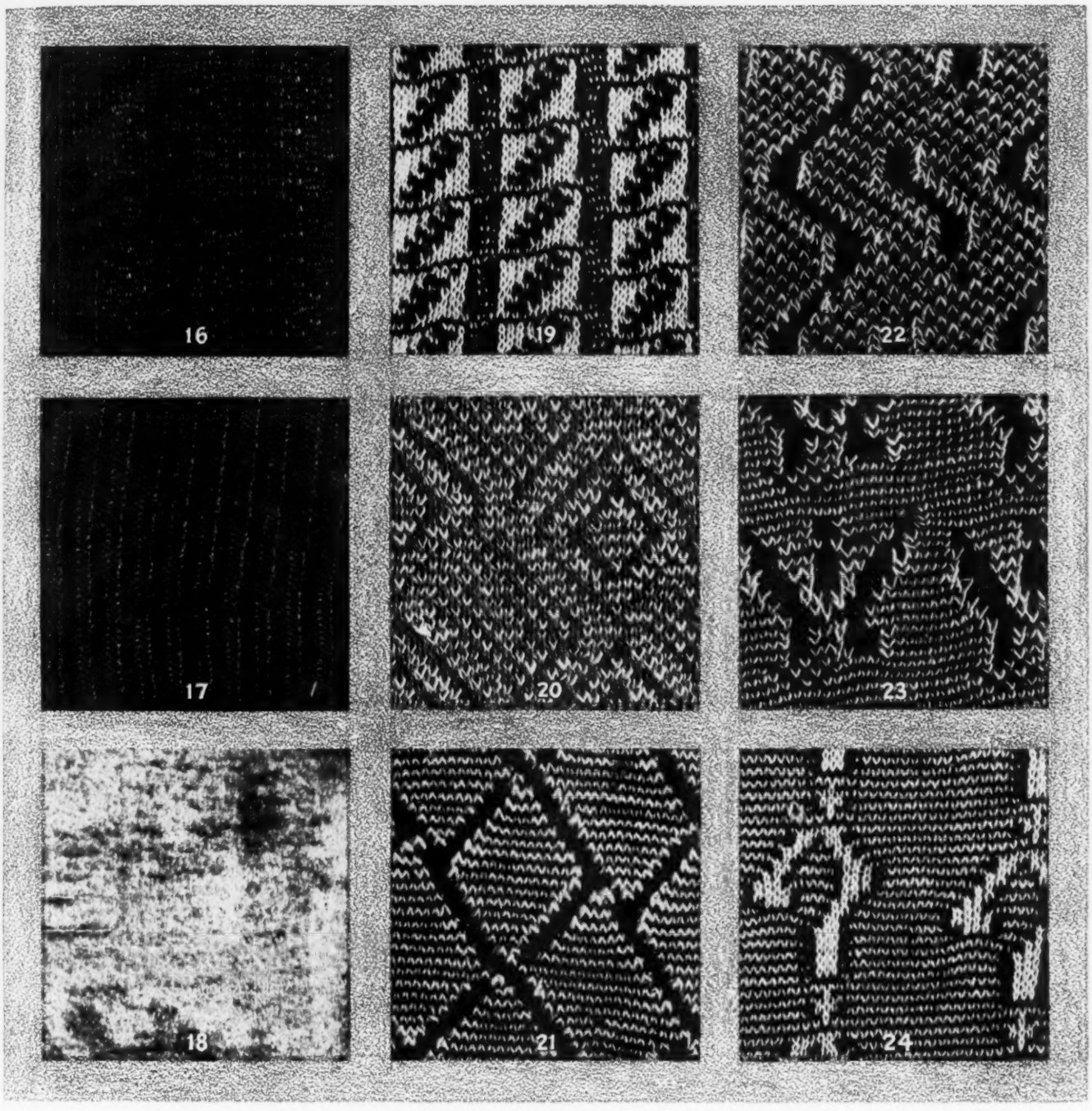
8. *Openwork for dresses or for skirts and coats.* 35-in. cylinder, 6 feeds of 30/2 cotton on face, 2 ends of 300-denier rayon on 1 plush feed, all green, 18 gage, 12 cut, 9 plush ends to inch.

9. *Cut-presser pattern for skirts and coats,* to be used with a more open pattern for blouses. 28-in. cylinder, 3 pattern-wheel feeds of 30/2 cotton, 1 plain feed of 20/2 cotton, all green, 18 gage, 12 cut, 56 stitches per foot of yarn.

10. *Open plush for blouses, skirts, and coats.* 30-in. cylinder, 7 feeds, 6 of blue and white 30/2 cotton with 1 plush wheel of 5-hank roving, 1 feed blank, 18 gage, 12 cut, 5 plush ends per inch.

11. *Rayon, with plush, for blouses and children's suits.* 35-in. cylinder, 6 feeds of 300-denier rayon with one plush wheel of 5-hank roving, all pink, 26 gage, 16 cut, 8 plush ends per inch of fabric.

12. *Lace work, with plush laid in, for blouses.* 35-in. cylinder, 5 feeds, 3



of white 20/2 cotton, 1 feed of two ends of white 300-denier rayon, 1 feed blank, 1 end of pink 5-hank roving laid in, 18 gage, 12 cut, 5 plush stripes per inch.

13. *Triple drop-stitch for blouses,* to be used with many of the suitings previously shown. 30-in. cylinder, 7 feeds, 6 of white 30/2 cotton, 1 blank, 18 gage, 12 cut, 54 stitches to foot of yarn.

14. *Blouse material.* 35-in. cylinder, 7 feeds, 6 of white 30/2 cotton, 1 blank, 1 plush wheel using white 10/1 cotton, 18 gage, 12 cut, 54 stitches per foot of yarn.

15. *Rayon fabric for three-piece suits.* 32-in. cylinder, 3 pattern feeds and 3 plain feeds, all 150-denier rayon, 28 gage, 18 cut, 84 stitches per foot of yarn. Silk and wool alone or in combination will be used in similar patterns.

16. *Rayon fabric for dresses and suits.* Construction same as for sample 15, but this illustrates the very fine patterns which will be seen in many rayon, silk, and silk-and-wool dresses this spring.

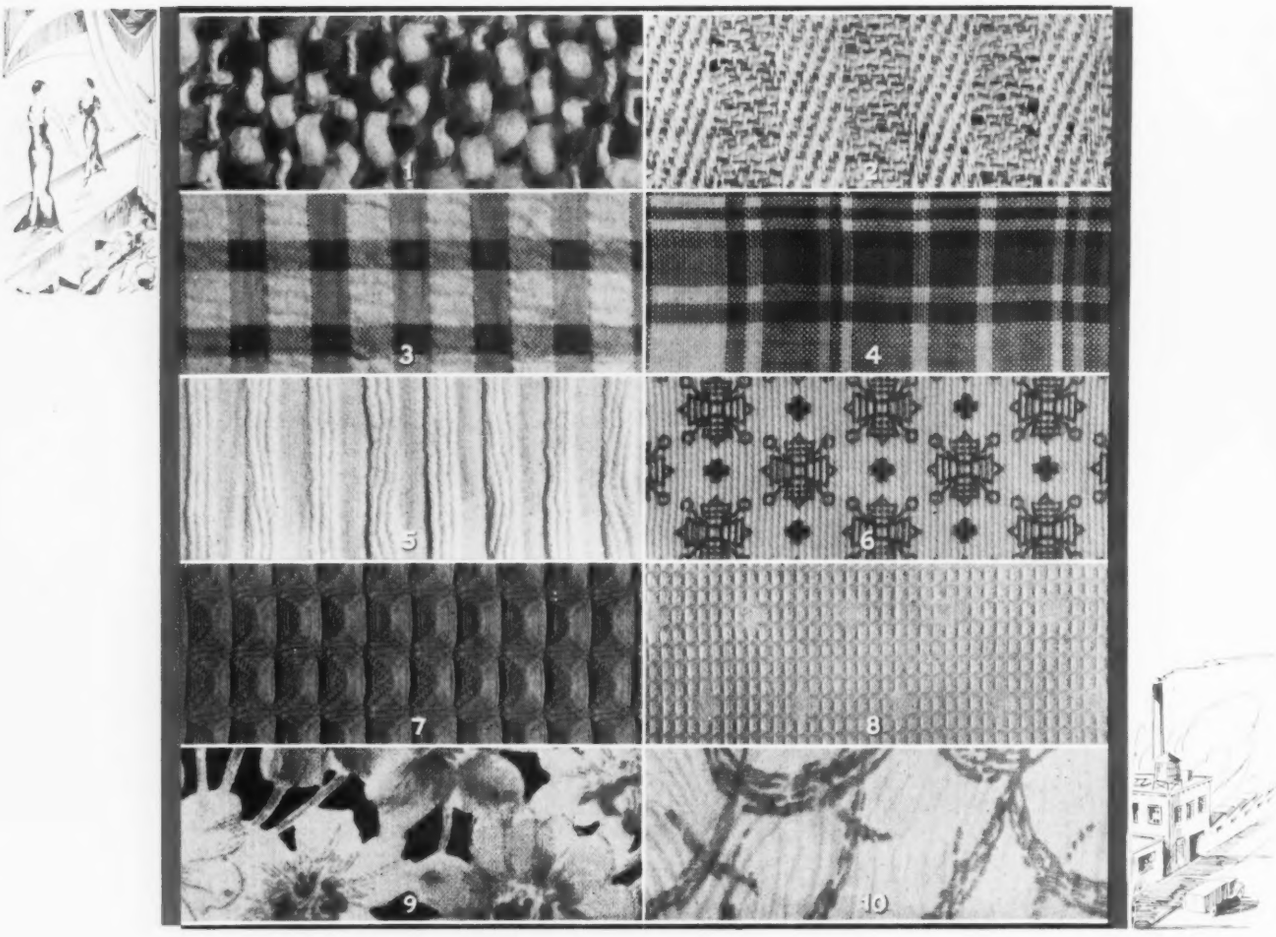
17. *For year-round dresses.* 35-in. cylinder, 4 feeds with plush wheel on each, 30/2 cotton on face, 300-denier rayon on plush wheels, all dark blue, 18 gage, 12 cut, 52 stitches per foot of yarn. Four ends of 1/17 rabbit-hair yarn can be used for the plush in place of the rayon. Dark brown is a good shade for the latter construction.

18. *Velvet produced on spring-needle loop-wheel machine for suits, dresses, coats, and wraps of all kinds trimmed with fur.* 32-in. cylinder, 4 feeds with plush wheel on each, 40/2 cotton on face, 300-denier rayon on plush wheels, 28 gage, 18 cut, 84 stitches per foot of yarn.

19 to 24. *Cotton dress fabrics.* 35-in. cylinder, 30/2 cotton, 18 gage, 12 cut, 52 stitches per foot of yarn. Large figures rather than openwork, will predominate in knit dresses this summer; but patterns of this sort will be made up for blouses using, say, 3 ends of 14/1 cotton and 3 ends of 30/2 cotton on 6-feed machines. Such patterns as No. 23, the Blue Eagle, will be used for children's wear, as will figures representing fish, animals, toy soldiers, etc. A wide variety of effects is possible through careful selection of the yarn-color combinations.

Fashionable Cottons

AS SELECTED BY COTTON TEXTILE INSTITUTE FOR SPRING AND SUMMER OF 1934



THE above samples are taken from a swatching service issued by the Cotton-Textile Institute for the spring and summer of 1934. The portfolio contains 74 samples chosen by a jury of style authorities after reviewing more than 15,000 samples. The Institute has the following to say relative to important trends:

DESIGN INFLUENCE—*Mexican*, in the brilliant use of color, of stripes, of texture, too; *Chinese*, in color combination, and in printed patterns; *Russian*, in corded texture and an occasional printed motif; *Peasant*, in printed floral pattern and in weave; *nautical*, but a new nautical influence in design and color.

FABRIC LEADERS—*Seersuckers*, for sport clothes—and for evening gowns, particularly plaid seersucker in lighter weights; *Organdies*, with varied crinkle finishes; *Voiles*, in dark grounds for town and formal wear; *Sateens*, and other cottons with a lustrous finish; *Ginghams*, in bold and dark color designs; *Piques*, the classic variety, new waffle weaves and wavy stripes; *Pique Voiles*, combining some of the best features of two important fabric leaders; *Plaid Dotted Swiss*, particularly for evening; *Suitings*, for day and sport clothes; *Dimities*, for evening, for town in dark colors and dark black-background prints; *Velveteen and Corduroy*, for accessories, for coats, for evening wraps; *Corded*, or *Ribbed* fabrics, vertical, horizontal, diagonal or the classic chevron type; also *novelty weaves* and combinations and *novel textures*.

NEW FINISHES—*Permanent* finishes on organdie, dimity, voile; *Water-repellent* finish on corduroy, velveteen and other cottons; *Sheer Handkerchief* finish and *Soft Lustrous* finish on new sateens; *Anti-Crease* finish on sheer cottons; *Controlled Shrinkage*.

COLOR TRENDS—*Natural* color, either alone or as a background for printed or woven patterns, probably the biggest news of all; *New Color Combinations*, pink and gray, pink and red, chartreuse, red-brown and soft blue, turquoise and red-brown, beige and green, as Chanel does it, coral, navy and brown in plaids; *Important Colors*, pink—decidedly, particularly dusty pink; the purplish cast in navy; dark colors in plaids; lavender; darker colors for children, plum especially; pink and lavender for children, too; brick red, Breton red, yellow green, peacock, turquoise, white, and lots of it!

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ILLUSTRATIONS—1. Coating showing Mexican influence. 2. Novelty suiting in natural color. 3. Lightweight seersucker for evening wear. 4. Gingham for blouses and country cloths. 5. Fancy pique with "tree bark" stripe. 6. Printed pique in Chinese manner. 7. Waffle weave for coatings. 8. Waffle pique. 9. Print using photoengraving for tone softness. 10. Printed organdie with printed crinkle.

ADVERTISING PAGES REMOVED

Cotton Code

MACHINE LIMITATION DEFENDED AT CHICOPEE HEARING

THE element of contest—which, as any movie fan will tell you, is one of the indispensable ingredients of drama—entered into the progress of the cotton textile code on April 2, when a hearing was held at Washington on application by subsidiaries of Johnson & Johnson for modification of the provision of the code limiting the operation of productive machinery.

Previously, this element of contest had either been lacking—or, when present, had been of an anemic type. It had been limited to routine claims advanced by organized labor without any expectation of success; to minor requests from various groups, and to other similarly unexciting events.

But the Johnson & Johnson petition struck a real spark. It was a blow aimed at the very heart of the cotton textile code—and the Code Authority rose as one man to resist it.

Back of the external politeness at the hearing—"My good friend, Mr. Watson," . . . . "That's a good title, Mr. Sloan"—there was a tense air of battle. In fact, it was a pretty good show.

The Proponent's Argument

The brief supporting the application was presented by Russell E. Watson, vice-president of Johnson & Johnson. The major points made in the arguments follow:

1. Increased costs due solely to machinery limitation result in an increase of 8% in the price of a piece of finished bandage—a "burden which ought not to be saddled upon hospitals and the sick and infirm."

2. Machinery limitation has taken from the two subsidiary companies of Johnson & Johnson (Chicopee Mfg. Corp. of Georgia and Chicopee Mfg. Co., a Massachusetts corporation) about 40% of their business and delivered it, without compensation, to others. . . . These two companies, it is claimed, "are being unjustly deprived of their property without benefit to anyone and to the detriment of the consumer."

3. Mill operatives have lost their employment by Chicopee companies by reason of decreased machine hours.

4. Machine limitation is unsound, uneconomical and prejudicial to the industry and to the consuming public.

5. Machinery limitation is the promotion of inefficiency.

6. If machine limitation is the panacea which its advocates proclaim, "it is passing strange that no other major industry has adopted it."

7. The applicant requests that paragraph three of the cotton textile code be modified by adding to it a provision that any manufacturer may operate productive machinery on four six-hour shifts daily, provided that the wage paid for six hours be the same that would be paid for under the code for eight hours.

Underwood & Underwood

George A. Sloan (left) talking across the table to Col. R. W. Lea, who presided at hearing.

NO ONE will deny Johnson & Johnson the right to attempt to secure, for its subsidiary companies, exemption from the machine limitation provision of the cotton textile code.

However this writer, at least, holds that Johnson & Johnson should not have been granted the right to hale a great industry into court to defend and protect a principle endorsed by an overwhelming majority of that industry. There is a limit to the rights of a minority and we feel that the NRA exceeded those limits when it permitted Johnson & Johnson to petition for a change in which the whole industry might participate rather than merely for an exemption for its own cotton mills.

Furthermore, we hold that Johnson & Johnson should not have been permitted to confuse the issue by mixing the question of wages with that of machine limitation. The validity of machine limitation is a vital question; discussion of it should not be diluted or confused by dragging in the quite unrelated proposal to pay the present eight-hour rate for a six-hour day.

We feel that the Cotton Textile Code Authority proved beyond doubt, at the hearing, that granting of the Johnson & Johnson application would invite the return of chaos to the industry. We consider it unfortunate that, through the tactics of one company, the time of the Authority should have been wasted in proving something that had already been proved.—*Editor.*

Defense of Machine Limitation

It is possible to enumerate only a few of the many strong arguments made by members of the Cotton Textile Code Authority and other speakers in defense of the provisions of the code limiting the operation of productive machinery:

1. It is not necessary to modify the code to obtain the changed rate of wage suggested; any manufacturer can work six hours per day, six days per week, and any manufacturer can pay eight-sixths of the present hourly wage rate if he desires. . . . This wage increase is not the real aim of the petition; it is to strip the code of all production control.

2. The dominant factor affecting the industry as a whole over a period of years has been over-capacity. Unrestricted operation of textile machinery is not a new idea; it was in effect prior to July 17, 1933. Statistics bear eloquent testimony to the results of such a program.

3. The Code Authority makes no claim that its method of control of over-production is a panacea for all industrial

ills; it does claim that the cotton textile industry is now on the road to recovery and that this control feature has been a vital factor in this accomplishment.

4. Running mills 24 hours a day would mean that more people would work on night work and others, now on day work, would be thrown out of employment. The social disadvantage of this is evident.

5. The removal of machinery limitations would throw the industry back to the chaos of 1931 and 1932.

6. The proposed change would be disastrous to small manufacturing companies.

7. Manufacturing costs would be increased rather than decreased if the proposal were granted; in other words the consumer would be hurt instead of helped as the proponent had argued.

8. Interests of labor are clearly aligned with balanced production, which leads to stabilized employment and healthy markets.

9. The proponent's claim that people have been put out of work without value to anyone is answered by the fact that 144,000 people were put back to work through the operation of the cotton textile code.

10. The Code Authority should not be worried, and the NRA should not be worried, about a provision which has done so much for the industry; it is a waste of time and the members should be dealing with more important and constructive things.

11. No thinking man would ask for an increase in the capacity of the textile industry at this time and yet that is exactly what the Johnson & Johnson proposal would do.

The speakers in defense of the code provision included George A. Sloan, chairman of the Cotton Textile Code Authority; Robert R. West, president of Riverside & Dan River Cotton Mills Co.; Robert Amory, treasurer of Nashua Mfg. Co.; Donald Tansill, of Pepperell Mfg. Co.; Sidney S. Paine, president of the Textile Development Co.; Francis Lynch, president of Saratoga Victory Mills, Inc.; Col. G. Edward Buxton, president of B. B. & R. Knight Corp.; Henry P. Kendall, president of Kendall Co.; Henry Lauten, speaking on behalf of the Textile Export Association; and Sydney P. Munroe, head of the Cost Section of the Cotton-Textile Institute.

At present writing, decision has not yet been rendered.

A bit of humor was supplied to the hearing by Mr. Watson's comment that the two Chicopee plants are small industries. This was in answer to the claim of the other side that granting of the request would penalize small industries. Since the Georgia plant has 59,000 spindles and 1,475 looms, and the Massachusetts plant has 43,000 spindles and 980 looms, there seemed to be some skepticism as to the minuteness of the two enterprises. In fact, some of the speakers were rude enough to express this skepticism openly.

Mr. Sloan contributed much to the dramatic qualities of the hearing. At one point, he declared that he had no desire to be associated with the Cotton Textile Code Authority if the machine limitation provision were removed. At another time, he stated that the Cotton-Textile Institute had been studying this problem of correction of over-capacity for seven years prior to the NRA. "We have long tried to shorten hours of machine operation," he said; "in fact, I think we were the first to make such a suggestion, and that was five years ago. Where were Johnson & Johnson, and Mr. Watson then?"

To repeat, it was a pretty good show.

Rayon Firms DENY MONOPOLY CHARGE

GENERAL denial of the charges of monopolistic practices filed against them by the Federal Trade Commission has been made by each of the ten rayon manufacturing companies named in the complaint. As this is written, date for hearing has not been set.

On the charge that these concerns conspired to eliminate price competition among themselves, a representative answer made by one of the companies was: "The prices which respondent has from time to time received for its viscose rayon yarn have always been determined on its own responsibility and dictated by its own policy which depended on the accumulation of its stocks of unsold viscose rayon yarn, on its financial condition, and on the law of supply and demand." Similarly, another company stated in its answer "that no attempt at uniformity with the prices of competitors has been made by this respondent; that its prices have been based on costs and ability to sell at the best possible figure depending upon the market; that this respondent did not make, or have any understanding with any of the persons, firms or corporations named in paragraph one of said complaint with respect to adherence to any set or fixed price for its products, and does not now have any such understanding or agreement."

In answer to the charge that these manufacturers had agreed to curtail production of viscose rayon yarn, thus limiting the supply of that yarn and of rayon cloth, a representative answer is to the effect that "this respondent did not, during the period referred to in said complaint, and does not now, curtail and limit the amount of viscose rayon yarn produced and sold by it; that this respondent has always gaged its production as a matter of policy so that it would be possible to ship most of the yarn made and stock very little; that it has used sales as a guide to production, and the volume of sales has been the basis upon which production was increased or decreased."

The Commission had also charged that agreements had been secured from knitters of viscose rayon yarn purchased from the ten companies, by which agreements the knitters obligated themselves not to sell cloth at prices less than those fixed by the companies; that the latter refused to sell to knitters who did not agree to the fixed prices, and that they cut off knitters who did not maintain the fixed prices. A representative answer to this charge states that "respondent has not, did not during the period named in the complaint, and does not at this time, attempt to fix, nor did it fix, uniform prices at which knitters of cloth manufactured by it should sell the same." It is further stated that the company has secured no agreements from knitters of cloth to obligate themselves not to sell rayon cloth except at a certain price; nor has it refused to sell yarn to knitters on account of any price agreement either with knitters or other producers.

With regard to the charge that the accounting firm of Price, Waterhouse & Co. was a party to the alleged conspiracy, a representative answer states that "this respondent says Price, Waterhouse & Co. submitted to it a statement for the purpose of determining the packed production during the months of November and December, 1931; that said company did not audit, or make any report concerning the unsold stock of yarn then in this respondent's possession, neither did said company make any report as to the percentage of capacity over which this respondent operated at any period of time, nor did said company audit the books of this respondent for prices charged or received for viscose yarn, the price at which this respondent sold said yarn and the price received being fixed by this respondent alone."

The companies named in the complaint are the Viscose Co., DuPont Rayon Co., Tubize Chatillon Corp., Industrial Rayon Corp., American Glanzstoff Corp., American Enka Corp., Skenandoa Rayon Corp., Delaware Rayon Co., Acme Rayon Corp., and Belamose Corp.

Textile Education . . .

Frederick M. Feiker, who made the survey and recommendations on textile education for the Textile Foundation, assisted by Foundation's educational committee.

LONG-TERM PROGRAM PROPOSED IN REPORT TO FOUNDATION

THE TEXTILE FOUNDATION report on textile education is one of the most important pieces of research ever concluded in this industry. It supplies a need which has been apparent for many years.

In fact, it is far more than a report on textile education. It is a report on the textile industry. It points a way in which the function of textile manufacturing can be broadened from its present narrow limits to a status of greater public service and greater satisfaction to the individual executive.

Unlimited praise is due the directors of the Foundation for their vision in initiating the study; to the special educational committee of nationally-known educators; to Mr. Feiker, who conducted the inquiry; and to the textile school directors and the textile manufacturers who cooperated with him.

This is just the beginning. It is rightly called a "report for action." The proper follow-through during the next few years will yield rich dividends to the textile industry. We are confident that nothing will be allowed to interfere with the continuing program proposed.—*Editor.*

A SPECIFIC program of action which, during the next five years, should bring about the development of an articulated educational plan for the textile industry, is recommended in the report on this subject prepared for the Textile Foundation by Frederick M. Feiker. The program includes refinement and coordination of existing courses in operation technique; development of broader courses in textile manufacture covering production, sales and financial phases of management; and two-way flow of thought and personnel between textile schools and general educational institutions.

The inquiry was undertaken at the direction of the board of Directors of the Textile Foundation as a contribution to the answer to these questions: What types of trained men are needed for the industry? What are the requirements for their education? How do the present textile schools fulfill these needs, and what improvements can be suggested? The survey was under the special direction of an educational committee for the Foundation, consisting of Dr. Karl T. Compton, president of M. I. T.; Dr. E. C. Brooks, president of A. & M. College, University of N. C.; and R. E. Dougherty, Dean of Engineering at Yale.

The textile industry has a right to be proud of its textile schools and of the contributions they have made to the operating problems of the business, states Mr. Feiker . . . They are serving primarily one branch of the industry: the preparation of young men for positions as overseers, superintendents, and a relatively smaller group of operating management positions . . . Until comparatively recent years, ownership and management in the textile industry have been thought to be the same thing; only recently has management been recognized as a profession distinct from ownership . . . A balanced education in textile mill management is possible in the present textile schools.

Recommended Programs

On the basis of these and other findings, a series of educational programs is recommended. These are summarized below:

1. The establishment of five types of training for men in the textile industry. It is not assumed that all these types of training shall be provided by each of the present textile schools or that any of the present textile schools will find it desirable to undertake all these suggestions. They are presented with the idea that during the next five years an articulated educational plan can be developed for the textile industry, which will furnish men to meet the trends in the industry:

a. Vocational—evening or day schools, arranged for one, two or three year certificate courses. In general, well done.

b. Courses in operating management and production method—at present needing further development in each of the schools—a four year degree course.

c. A four year degree course in chemistry and dyeing needs further development from the viewpoint of the chemical control of processes.

d. A four year degree course for men entering fields of marketing and sales—needing special development and complete reconsideration.

e. Advanced training in the functional problems of industrial management, the research problems in chemistry and physics and the general marketing and sales phases of the textile business—a field for graduate specialization.

2. Specific suggestions for "cross-breeding" modern management principles and philosophy, on a vocational stem.

3. A plan and specific proposal for coordinating and combining present materials of teaching the manipulative

side of textile manufacturing—opening, carding, spinning, weaving, with the object of gaining time for other subjects.

4. Definite suggestions for development of present courses in English, physics, chemistry, economics, costs and accounting practice, applied mechanics and electricity, resulting from interviews and observations in the present schools, and with specialists in other institutions of learning.

5. The establishment of a group of active committees:

a. A planning committee, conceived on a five-year basis to follow up the recommendations of this report.

b. A committee, or a group of committees, of textile instructors to counsel and advise on a detailed analysis of three proposals: manipulative and vocational training; applied economics and related business subjects; a development of present chemistry and engineering courses.

6. The holding of annual meetings of the directors of the schools to hear reports of above committees, and keep program abreast of changes.

7. A series of scholarships for the advanced training in research, engineering, industrial management, marketing and sales, for a group of men selected from four-year graduates, whose records give promise of their capabilities in these special fields. It is recommended that these men be offered the opportunity for advanced training in specialized textile subjects such as textile labor management problems now available at the Institute of Human Relations at Yale University, textile marketing problems at the Harvard Graduate School of Business, textile engineering at Massachusetts Institute of Technology, industrial management at the Wharton School of Business, University of Pennsylvania, social and physical research at the University of Chicago, and so on.

8. The development and organization of a one-year graduate course in textile manufacturing principles at the textile engineering schools, where graduates of general engineering or arts courses in other colleges may quickly gain a specialized knowledge of the textile industry.

9. The consideration of cooperative courses as a basis for textile training in certain localities in which the mill instruction and the school instruction can be coordinated.

Small Industries

IN NEW ENGLAND DON'T LIKE CODES BUT ARE OPTIMISTIC

SMALL manufacturers in New England must be incurable optimists. Despite the fact that only 28% of those answering the New England Council's questionnaire stated that the NRA codes had helped them, more than 58% expressed themselves as expecting improved conditions during the next few months.

The principal reason offered for dissatisfaction with the codes could have been anticipated in advance. Here it is: "Unable to absorb increased costs in selling price; no compensating increase in volume." The increased selling price, of course, was borne out by other data included in the report on this survey, as made public at the Council's quarterly meeting in Hartford, Conn., last month. Of those reporting, 62.5% have had increases in their selling price as against a year ago, with the most frequent percentages of increase ranging from 10 to 29%. However, the complaint that there was no compensating increase in volume was not borne out; 68.5% reported increases in dollar sales volume over a year ago, the principal range being from 20 to 39%.

Searching further for the real trouble, it is probably found in the data on profit margins: 56.5% reported decreases in their margins of profit as compared with a year ago, no change was reported by 26.6%, and only 16.9% reported an increase. Most of the decreases reported were in the ranges from 1 to 19%.

From the employment standpoint—which, after all, was the primary consideration in the drafting of the recovery act—the picture is a pleasanter one. In 363 of these smaller companies, there are 9,535 workers now employed as against 7,976 a year ago—an increase of 19.5%. About 70% reported increases in payrolls, ranging principally from 10 to 29%.

Here is an interesting question: "Where your costs of manufacturing increased, what did you do to offset the increase?" 52.6% raised their selling prices; 23.8% "could do nothing, absorbed added cost in lower profit." The relatively small remainder tried some other stunts: 5.5% increased their sales activity; 4.9% improved their methods; 3.6% reduced overhead expense; 3% "increased volume"; 2.7% installed modern machinery; 2.4% cut down on non-productive labor; 1.5% purchased cheaper materials.

Much has been heard about difficulty experienced by small mills in financing their operations. Of 251 companies which answered a question on this phase, 115 reported no difficulty; 59 "cannot obtain commercial loans from banks"; 40 said slow collections have hurt cash position; 12 report that banks require excessive collateral; and the remaining complaints are scattered over several miscellaneous difficulties.

Although the report as a whole is not too conclusive, it represents a good start and it is to be hoped that the Council will continue to gather information on this most important subject.

Among the speakers at the Council's quarterly meeting were E. Kent Swift, of Whitin Machine Works, and Robert Amory, of Nashua Mfg. Co.

Cotton Section

OF COMMITTEE D-13 STEALS SHOW AT SPRING MEETING

THAT COMMITTEE D-13 is not a static group was again demonstrated at the spring meeting held in Washington. Particularly was its virility demonstrated at the session of the raw cotton section. The committee is to be congratulated on its appointment of Dr. R. W. Webb as chairman of that section.

Prof. H. J. Ball, chairman of Committee D-13, is carrying on the aggressive leadership which characterized the administrations of his predecessors. It is safe to say that the textile industry as a whole has only a partial realization of the vital work which this organization is doing and has been doing for 20 years.—*Editor.*

COMMITTEE D-13 of the American Society for Testing Materials took a few minutes out of its spring meeting at Washington, D. C., last month to note the fact that it was the 20th anniversary of the initial meeting which led to the formation of the committee. Much more time was expended on plans for the future. Particularly was this true in connection with the committee's section on raw cotton. Under the new leadership of Dr. Robert W. Webb, senior cotton technologist of the Department of Agriculture, this section staged a remarkable meeting in advance of the general sessions. In fact, the cotton section came very near to stealing the show.

At the banquet Dr. Warren E. Emley, of the Bureau of Standards, acted as toastmaster. Speakers included Mrs. Edith Nourse Rogers, member of Congress from Massachusetts; Dr. Robert E. Rose, of E. I. duPont de Nemours & Co., and president of the American Association of Textile Chemists and Colorists; E. T. Pickard, chief of Textile Division, Department of Commerce; and Dr. L. B. Tuckerman, president of the Washington Academy of Science. Mrs. Rogers paid a glowing and well-earned tribute to the work done by Dr. Emley and Mr. Pickard in Washington.

Dr. Tuckerman, admitting and demonstrating that he knew nothing about textiles, pointed out numerous examples of vagueness and/or ambiguity in D-13 standards. At times he gave members real food for thought: for instance, when he questioned such expressions as "the sample must be *fairly representative* of the material." At other times, he provided merely not-too-funny after-dinner burlesque: for instance, when he made a wisecrack at the expense of such a good old textile term as "cheese."

Mr. Pickard presented a most clear and comprehensive picture of the research activities of the Textile Foundation, of which he is executive secretary. Among the new plans being prosecuted by the Foundation, and mentioned by Mr. Pickard, are a study of flax production, preparation and utilization, and one on the production of raw cotton.

Declaring that an enormous amount of research has gone into the making of the textile industry, Dr. Rose emphasized the necessity of support for, and correlation of, research programs in universities, in allied industries, and in textile mills.

The Cotton Section Meeting

The size of the attendance at the meeting of the cotton section and the interest manifested, augured well for the future progress of this section under the chairmanship of Dr. Webb. The latter was introduced by Kenneth B. Cook, chairman of Subcommittee A-1, who stated that the selection of Dr. Webb for this post was based on his scientific qualifications, personality and energy.

Technological problems in developing standards for character of cotton, and various other phases of the cotton standardization research of the Bureau of Agricultural Economics were described by members of the bureau's cotton laboratories.

The bureau has established standards for grade and staple length of cotton but none for character, a designation which includes the factors of strength, cohesiveness, elasticity and pliability, fineness, uniformity of dimensions, capillarity and porosity of the fiber substance, maturity and durability.

C. M. Conrad, of the bureau's technical staff, enumerated economic advantages of standards for character, but said that some of the difficulties in the way of such standardization result from lack of fundamental knowledge and of adequate laboratory methods. T. L. W. Bailey, described methods used for determining fineness and maturity of cotton fibers. H. B. Richardson described improvements which have been made in the Chandler bundle method for measuring the strength of cotton fibers.

Added interest was imparted to the section's meeting by the presence of David R. Coker, internationally known cotton breeder of Hartsville, S. C., who spoke on "The Importance of Cooperation Between the Cotton Textile Industry and the Cotton Breeder."

General Meeting of Committee D-13

At the general session, presided over by Professor H. J. Ball, of Lowell Textile Institute, chairman of Committee D-13, four valuable papers were presented.

The Sanforizing process was described verbally and with the assistance of motion pictures by Howard D. Clayton, of Cluett-Peabody, Inc. During the course of his remarks, Mr. Clayton reported that 35 mills and finishing plants in this country are now operating Sanforizing equipment.

The statistical analysis of data was discussed by Malcolm E. Campbell, of the Bureau of Agricultural Economics, in a paper on "A Method of Analyzing Cotton Yarn Strength Data," and by W. R. Marsden, of the Kelly-Springfield Tire Co., in a paper entitled "Discussion of Statistical Analysis as Applied to Tire-Fabric Testing." Both of these papers represented significant contributions and should form the basis for further development work.

Withdrawal of the standard specification for testing machines (A.S.T.M. D76-33) was advocated in an interesting paper by David C. Scott, of Henry L. Scott Co., Providence, R. I., on the ground that the specification is a hindrance to exactitude in testing and to the future advancement of testing-machine design. He offered data to prove that the inclination balance or pendulum type of tester specified by D-13 is responsible for inaccuracies through its inability to give either constant extension or constant rate of loading. "In any constant-pull machine," he remarked, "the fabric rate of load is variable because of the non-uniform rate of stretch of the fabric." Specimens of different properties consequently do not give comparable results. It should be recognized, he concluded, that the inclinable-plane type of machine and certain other types when properly constructed can produce a constant rate of not only machine load but of specimen load as well.

At the close of his paper, Mr. Scott moved that the specifications for textile testing machines be withdrawn from standard to tentative, pending revision, and that during such revision all specifications relating to tension testing machines

appearing in the other material specifications be considered in a purely tentative position. Action on the motion was deferred on the understanding that the matter will be brought up at the June meeting and that, in the meantime, Mr. Scott and Prof. George B. Haven are to act as a committee on the proposed revision.

The tremendous amount of work going on constantly behind the scenes of Committee D-13 was reflected in the reports of the various subcommittees presented at the general session. An abstract of some of the more important activities follows:

Subcommittee A-1, Section II, on Cotton Yarns (R. H. Adams, chairman): Making slow progress on revision of Draper standards. Data complete up to 40s. This section needs samples of yarns finer than 40s, accompanied by complete information on fiber used, and on method of manufacture.

Subcommittee A-1, Section III, on Light and Medium Cotton Woven Fabrics (Russell T. Fisher, chairman): Moved the submission of the shrinkage test to letter ballot for advancement to standard. This motion, amended to add the test to Standard General Methods of Testing Woven Textile Fabrics (D 39-27), was passed. During the discussion, H. M. Lawrence of the American Standards Association, outlined the steps taken in the proposed promulgation of this test as an American Standard. Incidentally Mr. Fisher predicted a busy year ahead for his committee in view of the pressure for consumer standards being brought to bear by the Consumers Advisory Board of NRA.

Subcommittee A-1, Section IV, on Tire Fabrics (Martin Castricum, chairman): Reported that recommendation of adoption of revised Tentative Specifications for Holland Cloth as a tentative revision had been approved by letter ballot. Two criticisms received in ballot are being given consideration. Also reported that, in an attempt to develop standard specifications for single yarn chafer tire fabrics, 15 different fabrics were revealed as in use in the industry. A special subcommittee has been appointed to give further consideration to this problem. In addition, a subcommittee headed by A. W. Hanson has reported that the D-13 method of calibrating cord testing machines showed too wide variations when applied to calibration of 20 machines; further study is in prospect. Alfred Suter advanced some useful suggestions in this connection.

Subcommittee A-1, Section V, on Hose, Belt and Numbered Duck (B. L. Whittier, chairman): Reported that this section would amplify Standard Specifications for Tolerances for Numbered Cotton Duck by adding methods of test. Also recommended development of method for determining weight of cottton goods based on the entire piece; referred to Subcommittee B-1, Section I, on Methods.

Subcommittee A-1, Section VI, on Narrow Fabrics (F. S. Mapes, chairman): Voted to submit Tentative Specifications for 0.007 in. Cotton Tape to letter ballot for advancement to standard.

Subcommittee A-2 on Rayon (A. M. Tenney, chairman): Reported that it will be necessary to revise specifications to conform to the proposed definition of direction of twist. Also stated that methods of identification of rayons, written some time ago, need complete revision in view of subsequent changes in types and properties. Conferring with American Association of Textile Chemists and Colorists on this; revisions when developed, will be submitted to D-13. Reporting also for Section II, on Rayon Fabrics (Alexis Sommaripa, chairman), Mr. Tenney stated that it was hoped to submit to the fall meeting suggestions for performance tests on rayon fabrics.

Subcommittee A-3 on Wool (G. E. Hopkins, chairman): Proposed specifications for woolen yarns, and revision of Tentative Methods of Testing Grease Wool and Allied Fibers for Scoured Content, will both be ready for submission at June meeting. Specifications for worsted yarns are being undertaken. Reporting also for Section II on Felt, Mr. Hopkins stated that test methods for automotive felts should be ready for submission in 6 to 12 months.

Subcommittee A-4 on Asbestos (J. M. Weaver, chairman): Reported work in progress on electrical resistivity of asbestos tapes.

Subcommittee B-1, Section I, on Methods (W. D Appel, chairman): New projects include work on specification for diameter of drums for testing multiple-end yarns and cords; and on development of standard procedure for serigraph method of testing yarn.

Subcommittee B-1, Section III, on Humidity (Prof. G. B. Haven, chairman): Announced intention of circularizing members of D-13 with regard to standard regain values for various textile materials; Chairman Ball urged full cooperation in supplying data.

Subcommittee B-2, on Nomenclature and Definitions (A. L. Brassell, chairman): Secretary W. H. Whitcomb read report. In connection with definition of "Direction of Twist," the following revised definition and appended note were recommended for submission to letter ballot:

"Twist, Direction of—In the case of yarn or cord held in a horizontal position and fixed at the left end, if the twist is taken out by turning to the right, or clockwise, when viewed from the right end, it is right twist and, if the twist is taken out by turning to the left, or counter clockwise, when viewed from the right end, it is left twist, i.e., the yarn or cord has right twist if when it is held vertically the spirals or twists are seen to incline upward in a right hand direction, and has left twist if the spirals or twists are seen to incline upward in a left hand direction.

"Note.—This definition is used by the cotton and wool industries. Due to trade custom, the opposite of this definition is used by the sewing thread, silk and rayon industries."

RESEARCH INSTITUTE HOLDS CONFERENCE ON

Wear and Wear-Testing

WHY fabrics wear and how resistance to wear can be predetermined were discussed at a conference held March 24 in New York under the auspices of the United States Institute for Textile Research. The primary purpose of the meeting was to determine what is being done throughout the country on fabric-wear research, and thus to enable the institute to devise a cooperative plan which will correlate work in progress and eliminate unnecessary duplication of effort. As a result of the conference, it was decided that owing to the complexity of the problem, the research committee of the institute would confine itself temporarily to a study of wear due to abrasion. It was emphasized that while in many cases the style factor determines the type of garment purchased, and the resistance to wear is at most a secondary consideration, in other instances fabric durability is of primary importance. A questionnaire distributed at the conference showed that of those present who are making wear tests approximately one-third are doing so tor mill-control purposes, one-third in connection with research work, and one-third to insure consumer acceptance.

The conference was presided over by Dr. W. E. Emley, chairman of the institute's research council, and chief organic and fibrous materials division, U. S. Bureau of Standards. Ephraim Freedman, director of R. H. Macy Co. bureau of standards, delivered the keynote address. He pointed out that abrasion is the most important of the several factors influencing fabric wearability and presented the results of abrasion tests on various types of textiles. These tests, according to Mr. Freedman, have disclosed great differences between the maximum and minimum resistance to wear of the same type of material, and thus show the need for a comprehensive and systematic study of wear resistance from all angles.

As the first step in any investigation of fabric wear, Charles L. Simon, of Industrial By-Products Research Corp., advocated the examination of worn fabrics to see what actually happens in practice. The results of such a study then can be made the basis for the development of testing machines which will duplicate the conditions under which fabrics are worn. Mr. Simon demonstrated a machine developed according to this theory for testing the resistance to wear of hosiery. Comments of others follow:

"A statistical department is necessary to determine the life of rugs and other fabrics which have a relatively long life. The variation in abrasive materials is greater than the variation in textiles."—C. H. Masland, 2nd, C. H. Masland & Sons.

"Carpet manufacturers are ready to pool data on durability of floor coverings."—G. E. Hopkins, Bigelow Sanford Carpet Co.

"Only by accumulating data on wear of fabrics which have been put into actual service, will we be able to get anywhere."—Ruth O'Brien, U. S. Bureau of Home Economics.

"In the last analysis, the consumer viewpoint is what is wanted. Humidity and temperature are vitally important in testing wear resistance."—J. B. Quigg, DuPont Rayon Co.

"The measurement of how much abrasion has taken place is a matter of laboratory test."—E. R. Schwarz, Massachusetts Institute of Technology.

"In making tests, the moisture content of the specimen, rather than the relative humidity of the room, should be considered."—David Scott, Henry L. Scott Co.

"Fabrics can be classified as those for personal use and those for household use, then as laundered and not laundered."—W. O. Jelleme, Pacific Mills.

"We should not make 'rubbing' synonymous with 'wear'."—Alexis Sommaripa, DuPont Rayon Co.

"To duplicate wear results, it is necessary first to find out what forces cause wear."—A. G. Ashcroft, Alex Smith & Sons Carpet Co.

"There should be an exhaustive study of present empirical wear-testing machines and then the development of standard machines and methods for determining wear."—H. J. Ball, Lowell Textile Institute.

"I should like to see fabrics classified as to use, the most important classes in which wearability is a factor grouped, the causes of wear determined, machines devised which duplicate service results, and properties of textiles which affect wearability determined."—H. De Witt Smith, A. M. Tenney Associates.

Critical of Spinning . . .

DRAFTING VERSUS EVENNESS

◆ *This article, besides reviewing a series of interesting tests on cotton-yarn processes reported in a recent issue of "Textile Research," published by United States Institute for Textile Research, Inc., contains a few thoughts offered by the reviewer, E. D. Fowle.*

AN EDITOR, perhaps a little groggy after sending the completed part of his next issue to his brief case, is sitting close to his desk lamp mulling over the March issue of "Textile Research." It may be the editing fatigue or it may be just the fact that it is rather too late in the evening; but an article bearing the impressive title "A Critical Study of Cotton Manufacturing Processes" interrupts his efforts to complete his job—as he certainly ought to do—and go to bed. It is causing him to begin thinking out loud—or, rather, on paper—and he hopes his readers will forgive him if, under these peculiar circumstances, he reviews a few fundamentals not unknown to them.

The article is a report of a test showing—not for the first time—that a strand of cotton loses a considerable amount of its evenness as it proceeds step by step from the carding operation through the spinning process. It calls to mind some interesting drafting experiments which are now being made and the questions which those experiments raise.

Today, as we pull the cotton card sliver down to a fineness which renders it suitable for being twisted into yarn, we interrupt the drafting process at various points. The original reasons for all these interruptions may be somewhat blurred by antiquity, but it is evident that that which occurs between the card and the first drawing frame arises from the necessity for "doubling" the card sliver to secure evenness. The interruption between the first and second drawings undoubtedly has the same object, but there is evidence to indicate that this doubling fails in its purpose. At one time we used the railway head to eliminate the first of the interruptions, but we abandoned this device when we found it undesirable to shut down several cards while only one needed attention.

The interruptions which occur between the various roving operations and the one between the final roving operation and the spinning may have originated from the necessity for inserting a slight twist in the roving to control the short fibers. At least it was not until Casablancas, Roth, and others discovered new methods for controlling the short fibers that some of these interruptions began generally to be eliminated. Even now, however, most spinners continue to believe that the sole purpose of the roving twist is to give sufficient strength to the stock for it to be fed to the next machine—and so far as textile literature is concerned, there is little to disprove this belief. If, then, we are to accept this latter, more general opinion regarding the purpose of roving twist, we have to assume that the purpose of the interruptions between slubbing and spinning is only to permit doubling of the stock to secure evenness. It could hardly be the differences in production between machines, because if several machines could be combined into one, the addition of some extra drafting rollers to each spindle would be a matter of relatively little importance.

Could it be—the thought may be scarcely tenable—that our textile fathers introduced these interruptions in drafting with the idea of improving evenness by doubling and unknowingly secured the results they sought more by the twist than by the doubling? As we have said, the origin of the system is largely lost in the haze of time and it may be that the fundamental facts, whether or not we have guessed them correctly, were well known to the pioneer roller spinners. Indeed, even in hand spinning, it was known at least that the twisting served to retard drafting in the thin places of the roving, while permitting it to continue in the heavy places. Furthermore, the very fact that there is often no doubling at the spinning must have indicated to some inquiring minds at various times that the necessity for doubling is not the whole reason why the drafting process is not a continuous one.

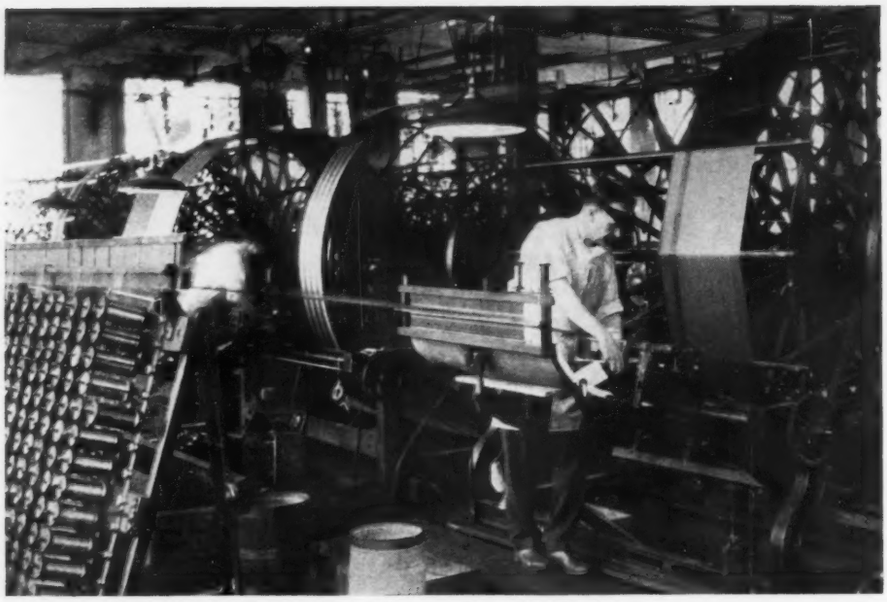
The investigation reported in "Textile Research" was made on the spinning of 28s yarn from 1 1/16-in. Delta cotton and was conducted by a junior fellow of the Textile Foundation, R. L. Lee, Jr., at Lowell Textile Institute, under the direction of Prof. Herbert J. Ball. After Mr. Lee had completed one test, he made a check test. In other words his report really covers two separate tests, and conclusions cannot properly be drawn from one without being qualified by the other. Mr. Lee readily admits that similar tests should be made on other cotton and other yarn numbers and under commercial production before final conclusions are drawn.

By weighing hundreds of samples of sliver, roving, and yarn and doing considerable calculating, Mr. Lee determined the coefficients of variation and the standard errors of those coefficients. Dividing the differences between the coefficients by the standard errors, he obtained "significance ratios." Readers who are interested in the details of these calculations are referred to the original article, but for present purposes the "significance ratios" are recorded in the accompanying table, and it is sufficient to note that plus values indicate increase in evenness and minus values indicate decrease in evenness.

	First Drawing	Second Drawing	Slubber	Intermediate	Fine Frame	Regular Spinning	Long Draft Spinning
Final Test	+ 9.8	—0.9	—9.7 —7.0	+2.5 0.0	+0.2	—1.7	—5.2
Check Test	+15.7	+0.7	—8.2 —9.2	+0.7 —0.1	—1.1	—8.6	—5.2

A study of this table shows that the irregularity of the strand of fiber—always pronounced in the case of card sliver—was improved by the first drawing, practically unaffected by the second drawing, increased almost double by the slubber (as compared with the condition of the strand when fed to the slubber), practically unaffected by the intermediate and fine frames, and increased appreciably by the spinning frame. A satisfactory comparison cannot be made between the effects on evenness of regular and long draft, because the two tests were not in agreement on this point, but it is at least interesting to note that "although the doublings for the long-draft method were one-fourth of those for the regular-draft method, no difference in irregularity proportionate to the difference in doublings existed between the yarns." Based upon the coefficient of variation for card sliver, the two tests and their subdivisions showed overall increases in irregularity ranging from 1.5 to 34.3%

Mr. Lee limits his recommendations to the statement that "a close study of the card, slubber, and spinning frame should be made to determine the specific causes of the increases in irregularity." But his results naturally lead to conjecture. Without the present doubling our yarn irregularity would undoubtedly be greater under our present method of spinning. Do we, however, need more doubling—or do we need more control of the short fibers by twisting or other means and perhaps less doubling? Other experiments now under way may solve these problems.



System increases the warper's wages.

Banking-up . . .

IMPROVED SYSTEM AN AID TO SILK AND RAYON WARPER

By Fred J. Luettgen

BANKING up in warping seems to be left more or less to the discretion of the individual warper in the majority of mills. The possible exception is a rule to run the silk off the bobbin as near as possible. In fact, in some of the mills the warper is compelled to clean the bobbins entirely. Razor blades and sand paper are very much in evidence in these mills. There does not appear to be any particular attention paid to banking and its possible effect upon production.

Very few mills have a systematic and well-managed method of banking. From these few, however, the writer has selected what has proved, over a period of time, to be the most successful.

A warper, for example, having a 600-end creel is given that many bobbins. At noon or at other spare times available he sorts the 600 bobbins into four groups according to their weight, selected either by guess or by scale.

When his bank is run down to skins, he will run to the end of his section and then tie up the first group of 150 bobbins (the heaviest). At the end of the next section he will repeat the process with another 150 bobbins. Thus in four sections he will have completed his bank. With this system of banking, production has actually increased from 16 to 22%.

The desirability of this method is self-evident. It increases the wages of the warper without increasing his basic rate. It provides improved warps and increases the efficiency of the weave shed. The elimination of numerous knots avoids defects and improves the quality of the cloth.

Before trying to improve the conditions in one department, it is well to look further than the department to be improved. Every change of conditions in one department has a direct bearing on every other department in the mill. For the very reason that this is ignored, the apparently simple process of changing the banking-up condition is so often condemned as being impractical. If this change is not carefully planned and viewed from all angles, the benefit to be derived from the change in the warping department will be more than offset by the confusion and dissatisfaction it will create in the winding department.

The customary method employed when changing to this system of banking is one of throwing the skinny bobbins in a box, as though they were empty bobbins. In this manner the bobbins are cut, bruised, and distorted looking. The reaction of the winding department to this change is evident as soon as the winder views the bobbins she is to refill.

If the management overrules the objection of the winders and insists upon working them up to the new system, the warper can depend upon receiving a bank of lapped ends when the bobbins are returned to him.

To make this system effective without antagonizing the winding department or jeopardizing its efficiency, an entirely new system of delivering bobbins to the warping department and returning them to the winding department must be adopted. Instead of the customary method of packing them in boxes for the warper, a series of bobbin boards must be used. These boards can be obtained in any desired size. The most practical would be boards that would hold 50, 60, or 100 bobbins. When the warper begins to bank up and takes a bobbin off the board, he should replace it with the skin taken off the creel with the end running off the bobbin on the right side. Every bobbin taken off must be placed on the board in this manner. If this practice is strictly adhered to, the confidence of the winder will soon be won and she will become enthusiastic about the new system. The enlarged barrel of the bobbin, due to having a small amount of silk remaining on it, will cause the winder to increase her production in a small way. This will naturally create satisfaction, instead of discontent.

The system of paying the winders on piece work seems to be an objection met with when discussing this system. This is very simple to overcome. The winder can be paid by the skein. This would in no way affect the winder in filling skins.

Under this system it is customary to run the silk off the bobbins about once every two months, so that there will not be any tender silk developing from being left on too long. This job is usually given to one warper, the assignment rotating among the men.

PROPER BLENDING AND OILING SIMPLIFY PRODUCTION OF *Rabbit Hair Fabrics*

By Louis S. Potsdamer
Industrial By-Products & Research Corp.
Philadelphia

FOR the last few years rabbit hair has found extensive use in the manufacture of highly styled women's wear fabrics. This is due especially to the soft handle and the attractive fuzzy appearance of the finished goods. Spinners have been able to blend this fiber with wool with more or less success, depending upon their own degree of experience. The difficulties have been due to unevenness of blending—a frequent fault, but one easily overcome—and excessiveness of fly being produced as a result of the fine, light character of this fiber.

For spinning on the woolen or worsted systems, the blend of rabbit hair and wool must be laid down carefully and in a well oiled condition. A great deal of the success in handling such a blend is due to the use of proper percentages in the mix, the proper type of rabbit hair fiber, and the careful choice of wool stocks, as well as correct percentages of oils or emulsions.

The name "rabbit hair," as applied to textiles, covers a great range of fibers from the very coarse, beardy material to the very finest, soft, downy white; and it is the spinner's choice of these grades which will, to a great extent, aid him in his ease of spinning. Of course, it is of the utmost importance to choose the correct grade and type of wool at the same time. Generally the spinner will select a fine half-blood California wool and such rabbit hair as can be purchased most advantageously, with a staple not too short to allow for proper spinning. Naturally, if the rabbit hair is of a poorer grade, the wool stocks should also be let down in quality, so that there shall be a minimum of slippage and similar troubles in the drawing and spinning operations.

It has been found that the amount of oil used for lubrication of the fibers in the blend will vary from as little as 1 pint up to some 10 qt. to 100 lb. of stock. Such wide variation is entirely due to the different methods of spinning employed by one or another of the spinners who handle such work. For example, different types of machinery will require different methods of lubricating and different quantities of lubricant. The choice of lubricant is also important, and a lubricant should be selected which will wash out freely from the finished yarns, without staining. A typical emulsion is made up with 60 parts of a self-emulsifying mineral-oil compound to 10 parts of water, the exact formula being dependent upon the requirements of the individual spinner.

When the mix, chosen and handled as indicated above, is worked through the cards, the fly can easily be held down by a mist of steam or fine particles of water sprayed over the machines. The drawing and spinning should present little difficulty, although even with greatest care, the yarn may show uneven sections of blend which may or may not cause soft, weak spots.

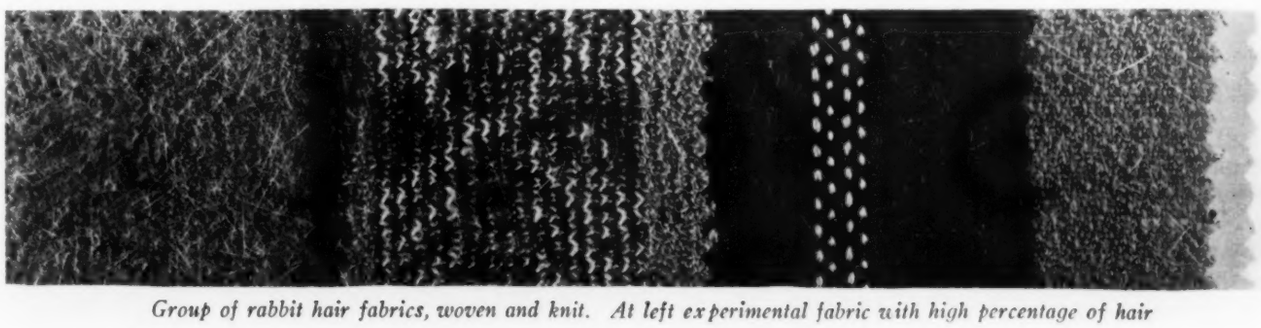
A great deal of research by the producers of raw materials and the yarn and fabric manufacturers has resulted in the preparation of rabbit hair for use in both woolen and worsted spun yarns with the minimum amount of loss and the maximum production. Much of the loss in the past has been due to uneven, soft-spotted slivers which resisted drawing to size, and thus added to the troubles of the spinner in production of yarn.

The yarns lend themselves well to the knitting and weaving of delicate women's wear fabrics. Although it is sometimes necessary to size warps (whether woolen or worsted spun) in order to prevent chafing through the reeds or breakdowns no more of this is necessary than in ordinary blended yarns.

In the weaving of fabrics from the worsted spun type, less fly is noticed than in the use of woolen spun yarn. This is probably due to the nature of the spinning, in which the parallelizing of the fibers allows the wool to hold the rabbit hair more firmly.

In finishing these fabrics, best results are obtained by scouring in the usual manner—being careful not to handle too roughly, as the material may quickly felt and "run away" to a very much heavier fabric than was planned. The addition of a scouring aid containing pine oil has been found advantageous, as it tends to brighten the hair fabric and permit brilliant dyeings.

Rabbit hair is dyed in exactly the same manner as is wool. The final steps in finishing rabbit hair fabrics consist of tenter drying and pressing. In general, no shearing is required, as the slightly fuzzy face is a condition much sought after. If the fabric has been produced, in general, along the lines outlined in this article, it will be found that shedding of the rabbit hair fibers will have been minimized.



Group of rabbit hair fabrics, woven and knit. At left experimental fabric with high percentage of hair

TEXTILE OPERATING EXECUTIVES OF GEORGIA DISCUSS

Carding and Spinning

CARDING and spinning problems were discussed at the semi-annual meeting of the Textile Operating Executives of Georgia, held March 17 at the Georgia School of Technology, Atlanta, Ga. Over 300 members and visitors attended the meeting, which was presided over by the general chairman, George S. Elliott, manager, Pacolet Mfg. Co., New Holland, Ga.

The first speaker, C. D. Honiker, of Fulton Bag & Cotton Mills, discussed briefly the subject of waste, pointing out that in addition to fiber waste, there are power, time, labor, and space wastes. "It requires a doffer an average time of 8 min. to remove a thousand bobbins," said Mr. Honiker. "What does he do with his other 52 min.?" Mr. Honiker cited many specific examples of labor saving through time studies and job analyses, stressing the fact that workers on poorly organized jobs are now being paid the minimum wage under the codes, and it is absolutely necessary that such jobs be put on an efficiency basis.

The discussion of carding problems was conducted by A. D. Elliott, superintendent, the Trion (Ga.) Co. The consensus of opinion was that better results are obtained by using a 100% middling mix rather than a half-and-half mixture of strict-low and strict-middling cotton. Allan Jones, superintendent, Muscogee Mfg. Co., Columbus, Ga., said that clean white cotton tends to act as a sponge, picking up trash and dirt. He favored running the strict low through a separate cleaning line consisting of a No. 12 opener, a Buckley cleaner, two vertical openers, and a Centrif-Air machine. George S. Elliott suggested the planning of a regular mix for each day, making adjustments when necessary. Another speaker suggested mixing on the drawing process, using alternate cans.

In reference to long-staple processing, it was suggested that a 20% reduction in beater speed and a quicker removal of stock from the beater tends to eliminate the curling of the cotton. D. D. Quillian, superintendent, The Athens (Ga.) Mfg. Co., remarked that he had noticed a modern system of cleaning trunks doing excellent work. L. H. Rice, general superintendent, Alabama Mills Co., said that a 40-ft. cleaning trunk in the Jasper (Ala.) unit of his company is giving very good results. He said that he prefers the rake-type conveyor to the air type.

It was brought out that records of performance for individual pickers are valuable, as they enable a mill to check up on the cause of uneven laps. One mill kept records and discovered that its single-process picker, built new with one evener, ran 365 laps without a single rejection. R. A. Morgan, general manager, Cedartown (Ga.) Cotton & Export Co., advanced the opinion that improvements in single-process change-over equipment offered by the machinery builders have advantages over makeshift hook-ups. Another member stated that in his plant, single-process pickers are equipped with two eveners, the one on the back operating the apron on the hopper.

There was considerable discussion concerning the exact time when the hunting-tooth gear knock-off is about ready to take place. One member said that he could tell simply by looking at the working parts on his machine, as there will be a two-tooth difference between the knock-off gear and the intermediate gear. Others raised the objection that the mechanism is so inclosed as to prevent inspection. The best method of preventing lap breaks is to synchronize the speed of the pickers as nearly as possible so that the machines will not get out of doffing rotation. Belt slippage was named as a cause of variation in speed.

The normal life of wire on top flats was generally agreed upon to be from 15 to 25 yr., depending upon the type of work, length of schedule, method of grinding, and kind of wire. Flats which have been in use for 30 yr. are common in many mills. J. C. Platt, agent, Aragon (Ga.) Mills, said that with ordinary grinding he believes that a good grade of wire should last at least 15 yr. on the 60-hr. week basis. P. W. Ellis, superintendent, Sibley Mfg. Co., Augusta, Ga., pointed out that chains cost only about $15, and new ones will often prolong the life of a flat for several years; George S. Elliott said that new chains extend the life of flats at least 6 yr., or 20 to 25%. It was generally acknowledged that when the wire wears within a certain distance of the knee, flats should be changed, and several advocated installing new chains at this time as an economic measure. Several members stated that they remove two flats from a 110-flat card before replacing worn chains, but advised against removal of more.

One member remarked that in order to make a lighter drawing sliver, he went from six ends up to five and kept the draft the same, but was forced to return to six ends up. Another speaker asserted that he had obtained a more even roving by changing from five to six ends up and increasing the draft.

Opinion as to the relative merits of fiber and wood bobbins differed. Mr. Quillian reported that he has been using fiber bobbins for over a year and has not lost a single one.

A. D. Elliott, of Trion, Ga., stated that tests on one or two frames can not be relied on as being absolutely indicative of the results which might be expected when long drafting on a slubber and intermediate roving frame is attempted on a large scale. He said that the process as applied to roving has possibilities and will bear experimentation. R. Donald Harvey, superintendent, Pepperell Mfg. Co., Lindale, Ga., stated that he too had experimented with this type of long-draft roving which, like the other, does not involve splitting the web on the card. Drafts as high as eight and ten on the slubber were reported.

The discussion on spinning problems was led by J. C. Edwards, superintendent, Martha Mills, Thomaston, Ga. E. H. Rogers, agent, Fulton Bag & Cotton Mills, Atlanta, Ga., said that neither the combination wind nor the reverse warp wind will entirely eliminate smoked

yarn, but that the latter type shows a smaller area of smoked surface because of its overlapping turns.

V. J. Thompson, superintendent, Callaway Mills, prefers the combination wind as it ordinarily can be run at a higher speed, although it cannot be used for certain types of high-speed spooling. He said that high-speed winding means shorter exposure to the atmosphere, and, consequently, less smoked yarn. It was pointed out that factors contributing to a smoked yarn condition are dust, sweepings and radiation from heat coils. Atmospheric conditions were said to affect the amount of smoked yarn; cold air has a tendency to deposit more suspended particles than does warm air.

It was generally agreed that in making bunches on a filling spinning frame, the main traverse cam should not be run back to the original starting point after each drop of the traverse. A certain amount of coarse yarn will automatically drop behind the bunch with little likelihood of breakage, whereas fine yarn has a greater tendency to break. Waste will be cut down if the bunch is kept close to bottom and spindle cleaned often.

Mr. Edwards illustrated with a diagram the proper method of weighting the traverse motion on a spinning frame. He said that the weight should be properly distributed along the lever arm until it is slightly off balance on the heavy side, producing a positive pull. The amount of weight should be carefully regulated, as too much is likely to cause breakage.

The majority of those present agreed that mixing 15/16-in. and 1-in. cotton will cause unevenness of yarn on the standard system of drafting, but will be much less noticeable on the long draft. A large number favored replacing aprons on long-draft spinning as they wear out. A weekly inspection of aprons and the replacement of those found defective proved popular. Another suggestion, as a weekly inspection might prove hurried and inadequate, was to scour and inspect the aprons every six months and make replacements, keeping the old but usable aprons until such a time as they might be needed. It was recommended that steel rollers be inspected at least twice a year.

Geo. S. Elliott, general chairman, Textile Operating Executives of Georgia

A. D. Elliott who conducted the discussion of carding problems at Atlanta meeting

Cork rolls were said to require rebuffing every three or four months when operated on the 80-hr. week; however, this depends to a great extent upon the size yarn being run. Cork rolls were reported to have a longer life than leather rolls, and yarn run through them was said to test somewhat higher in breaking strength. End breakage is greater, however, when cork rolls are used. It was reported that when the rolls are in good condition, no trouble is experienced in starting up on Monday mornings.

Only a few of those present use any chemical in humidifiers other than water. A small amount of soluble pine oil is sometimes added for imparting a pleasant odor to the air and eliminating musty smell.

A. D. Elliott, superintendent, the Trion (Ga.) Co., was reelected to the executive committee.

Progress of Synthetics

DEPICTED AT FASHION GROUP SHOW

THE progress made to date in synthetic textiles and plastics is given colorful dramatization in an exhibition of "Fashions and Home Furnishings in Contemporary Man-Made Materials" which is being held by the Fashion Group in its gallery at Rockefeller Center, New York, April 2 to 29. From the point of view of rayon promotion, the event is easily one of the most significant yet held in this industry.

The scope of the exhibits challenges the imagination. Apparel (both under and outer wear), draperies, upholstery—indeed every major market where rayon has won acceptance,- is represented. The setting, which was designed by Eleanor LeMaire, is novel and serves to accentuate the beauty of the merchandise. The exhibition is arranged in the form of a modernistically decorated circular passage-way which permits the visitor to focus without distraction on specific displays. Among the featured showings are: an opera scene, an automobile interior, and numerous boats, beach, bedroom and picnicking scenes.

The fabrics include transparent and cut velvets, flat pebble and ribbed crepes, the newer basket weaves, a wide range of daytime and evening prints, and various satins of sheer and heavy weight. The display of accessories embraces gloves, hats, shoes and scarfs, shown in relation to time of day and occasion.

An exhibit of especial interest to weavers is "Fabric Row" which comprises an artistic arrangement of 12 of the season's newest weaves and prints. The bedroom merchandise includes rayon satin mules, negligees, lace-trimmed units and smart satin pajamas.

The story of rayon's development is portrayed in several striking displays. Near the entrance stands a cascade fountain of white synthetic yarns, spectacularly lighted. Adjacent are a display of coned yarns, and a showing of laboratory tubes depicting rayon in various stages of its chemical development.

Complementing the textiles, one finds an assortment of the newest plastic products, including table-ware, chairs, home bars, golf clubs, canes, cocktail sets, clocks, radios. For decorative purposes at the exhibition DuPont Cellophane and Tennessee-Eastman Kodapak are used.

Other novel showings serve to round out the picture of human progress in simulating nature's own products. Editorial presentations which trace rayon's rapid development are contributed by *Vogue* magazine, and by the *Dry Goods Economist.*

The exhibitors include:

Yarn producers—DuPont Rayon Co., Viscose Co., Tennessee-Eastman Corp., American Bemberg Corp., American Glanzstoff Corp., Skenandoah Rayon Corp. and American Enka Corp.; Mills—Susquehanna Silk Mills, H. R. Mallinson & Co., Oswego Rayon Co., Vassar Swiss Underwear Mills, Foreman Silk Co., American Silk Mills and Bloomsburg Silk Mills; Plastics—Bakelite Corp., Taylor Instrument Co., E. I. duPont de Nemours & Co., Revolite Corp., Procter & Gamble, Formica Insulation Co., and Western Clock Co.

Full Mercerization

IS IMPORTANT IN FINISHING COTTON-ACETATE DRESS GOODS

By A. J. Hall

A POPULAR and attractive dress goods fabric is one with a cotton ground and acetate stripes or checks. The cotton may be dyed to a pale shade and the acetate to a deeper shade, the cotton may be dyed and the acetate left white, or the cotton and acetate may be dyed in contrasting shades. In any case, however, a full mercerization is necessary to give the cotton a luster which is comparable to that of the acetate and to enhance the appearance of the fabric.

The first thing to decide is whether mercerization is to follow or to precede dyeing. There are advantages and disadvantages attached to both procedures. Therefore, in outlining the methods employed, we shall first consider the mercerizing operation.

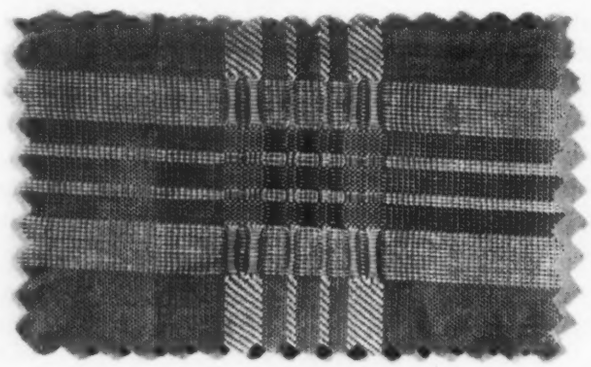
We know that during the mercerizing process, the fabric comes in contact with concentrated caustic soda, and unless due precautions are taken, the acetate may become partly hydrolyzed and acquire an affinity for direct dyes. Such hydrolysis must, of course, be prevented, since it is only because acetate has dyeing properties different from those of the cotton that two-color effects can be obtained. Hence it is a safe policy to let mercerization follow dyeing. The disadvantage of this is that selected fast dyes must be used; and even then matching of shades is somewhat difficult, since slight color changes cannot be avoided.

On the other hand, if mercerization precedes dyeing, matching of shades is simplified. Again, it is generally believed that mercerizing before dyeing gives the more lustrous fabric. For these reasons, the more common practice is to mercerize before dyeing.

It is possible to mercerize either in the gray or after the goods have been scoured and bleached. The writer prefers to scour the fabric first with soap and ammonia in a jig or on a continuous soaper, wash, bleach in the usual manner, wash, and dry before mercerizing.

Mercerizing can be carried out with the usual machinery used for cotton fabrics, but the mercerizing liquor should be maintained at a temperature of about 50° C. Also it is essential to rinse the alkali from the fabric by means of cold water. A hot wash is unsuitable, because it immediately leads to hydrolysis of the acetate. The more rapidly the alkali is removed from the fabric—after sufficient time (about 30 seconds) has been allowed to give a full luster on the cotton—the less danger there is of hydrolysis,. Scouring should follow immediately after washing. It is good practice to dry the fabric after mercerizing, in order to make the acetate less receptive to and therefore less stainable by direct dyes.

The type of material under consideration is ordinarily dyed on the jig. If the preliminary treatments have been controlled properly, and the dyestuffs have been selected carefully, no particular difficulty will be encountered in producing dyed grounds with white acetate effects. The fabric should be well washed after dyeing; and if staining has occurred, a warm soap bath should follow. If the acetate is badly stained, a final warm treatment in a soap bath containing a small amount of soda ash and sodium hydrosulphite will prove beneficial. When both the cotton and acetate are to be dyed, the single-bath method usually gives satisfactory results if suitable direct and acetate dyes are employed. It is essential to avoid staining of the cotton by the acetate dye; otherwise dyeings may be produced which are less fast to washing and which may lack brightness.



Acetate plaid pattern on cotton ground in which the acetate is white on a colored ground

Addition to the dyebath of soap and preferably a small amount of ammonia will help to prevent staining.

Drying and Tentering

The goods, after dyeing and rinsing, should be hard mangled or extracted at full width and dried. When drying is carried out on dry cans, the fabric should pass quickly over the cylinders. In this manner the bleeding of any loose direct dyestuff from the dyed cotton ground into the acetate stripes or checks can be avoided. This procedure is particularly important when the cotton is dyed a navy blue shade with Diamine Black BH. This dyestuff is usually employed on account of its good resist properties to acetate; but unless precautions are taken in drying, it readily runs into the acetate and stains it gray.

Finishing of the dyed material is carried out by tentering to the required width. The handle of the fabric is improved if a small amount of soap is left in the fabric from the dyeing. If this is not done, softening can be effected by impregnating the fabric on the finishing range with one of the various proprietary products now available for this purpose.

In order that the fabrics may not afterwards creep in width, it is desirable that the goods entering the tenter frame be subjected to a copious steaming. When the fabric is stretched to width and dried on the tenter, this added moisture is removed, thereby leaving the fabric fully "set." Afterwards the fabric can be given a soft handle by calendering it lightly between cotton and paper bowls, or between cotton and steel bowls if it is desirable to give the goods a slightly glazed appearance.

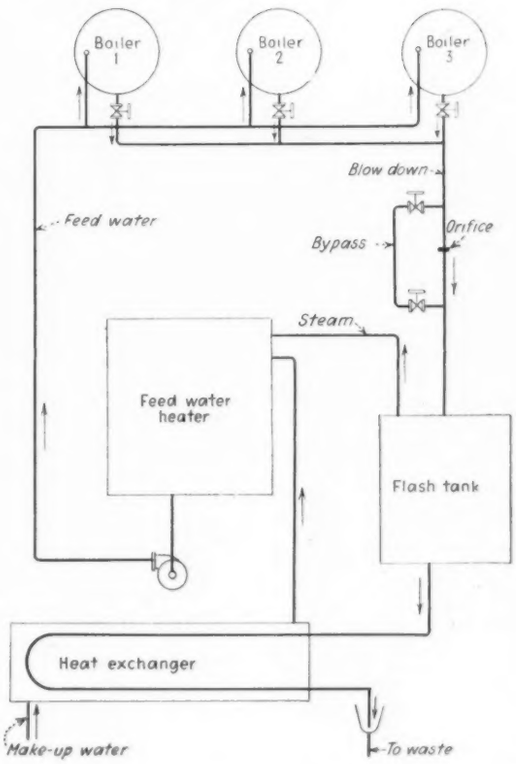
Boiler Blowoff . . .

CONTINUOUS SYSTEM HAS ADVANTAGES IN MANY TEXTILE POWER PLANTS

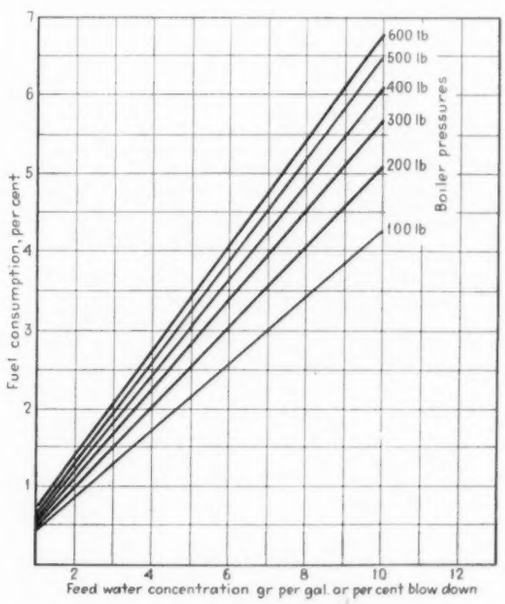
By N. T. Pef
Consulting Engineer

TODAY the amount of coal required by a modern power plant for the generation of a kilowatt-hour is just about one-half of the quantity used in 1919. This reduction is due in large part to the installation of fuel-saving devices. Continuous boiler-blowoff equipment is one of the more recently developed of these fuel-saving devices, and one which is being adopted quite extensively in industrial power plants. The continuous blowoff system is applicable in many textile mills; and it will prove particularly advantageous in plants which do not return the greater part of the steam to the boiler in the form of condensate, but use a large amount of so-called process steam for heating dye liquors, rinse waters, etc.

All natural waters contain a certain amount of solids. In their original state these waters may not be harmful, but as the steam is evaporated, leaving the solids behind, a concentration is reached which is both wasteful and dangerous. Assume, for example, that a boiler is evaporating 10,000 lb. of steam per hour. The feed water contains solids to the extent of 100 parts per million; and since 10,000 lb. per hour is fed to the boiler, the amount of solids carried in is 1 lb. per hour. At the end of 24 hr., 24 lb. of solids will have entered the boiler. If this process is carried on, and the boiler is not blown off, it would seem that in time the boiler would be clogged with solids. This does not take place in actual practice, as the moisture in the steam carries part of the solids; and the greater the concentration, the greater is the carry-over, until finally a point is reached when the quantity of solids carried away by the steam equals that brought in by the feed water.



Continuous blowoff layout



Relation between amount of blowoff and fuel consumption resulting therefrom. Assumed Conditions: Boiler water concentration to be maintained, 100 gr./gal. Temperature of water entering heater 80° F. Temperature of water entering boiler 212° F. Boiler efficiency 60%.

Of the solids carried into the boiler by the steam, some will be deposited on the superheater tubes. This will decrease the efficiency of the superheater and may be the cause of burned tubes. Some will be deposited on the valve seats and make them leak or destroy their usefulness. Part will be carried to the engines, turbines, and other equipment. There it will act as an abrasive and speed up the wear and tear on the machines and lower their efficiency. If the steam is used for any process work, the dirt may be a real handicap.

These evils can be minimized by blowing the boiler; and they can be entirely eliminated through correct and scientific blowing. Until a few years ago practically all blowing was done by hand. The procedure followed

in the usual case was to blow once a shift, or every 8 hr. There are several objections to this practice, the most important being that the heat cannot be recovered conveniently.

On the other hand, the continuous blowoff systems, in which a small percentage of the water is withdrawn from the boiler at a uniform rate, enables recovery of the greater part of the heat, gives a slight reduction in labor costs, permits the concentration to be maintained closer to the set minimum, eliminates the onrush of cold water to which the boiler is subjected after a blowoff by the older method, and minimizes the possibility of omitting a blowoff or of over-blowoff.

The greater the percentage of make-up water, the greater is the economic advantage of continuous blowoff equipment. As a general rule, continuous blowoff is not warranted in a closed system, where all or practically all of the feed water is condensate. There are many plants, however, which use large quantities of process steam; and in these the cost of the equipment often is returned in less than a year by the saving in fuel. Even when the amortization period will extend throughout the entire life of the equipment, the advantages other than fuel savings justify the investment.

The present tendency is toward lower boiler concentration; and many well-managed power plants keep it at 2,000 p.p.m. or less. With the feed water at 100 p.p.m., the solids are intensified 20 times, and the blowoffs must amount to one-twentieth, or 5%, of the feed water. For average boiler conditions, this will approximate slightly more than 2% of the fuel. The accompanying chart (Fig. 1) shows the fuel consumption under various conditions, and the sketch, Fig. 2, illustrates a typical layout of a continuous blowoff system.

Hard Facing

OFFERS MANY OPPORTUNITIES TO REDUCE MAINTENANCE COSTS

◆ *The following is an abstract of an article which appeared in a recent issue of "Oxy-Acetylene Tips," a publication of the Linde Air Products Co.*

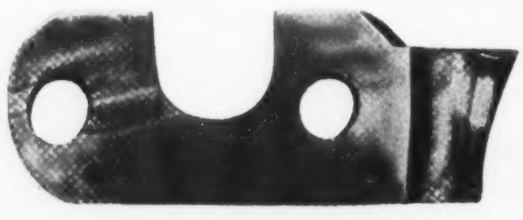
WHENEVER abrasion is encountered, the life of the part subjected to excessive wear is shortened to less than that of the rest of the machine. Shutdowns, repairs, or replacements are the inevitable result. Valuable production time is lost while the equipment stands idle, and overhead expenses do not cease. Frequent replacements decrease efficiency and increase production costs. Hard-facing those members which are exposed to severe wearing action greatly increases their life. Fewer spare parts are necessary; idle machine time is decreased; production costs are lowered; and greater over-all efficiency is maintained. The following examples illustrate the direct economies made possible through longer life of hard-faced parts in the textile industry and also indicate the savings more difficult to calculate resulting from fewer shutdowns.

One large knitting company, experimenting recently with the hard-surfacing process, applied an abrasion-resisting alloy to the wearing surfaces of stitcher cams. New cams cost $2.18 and lasted for approximately one month. It was found possible to build-up the worn cams for 38c., including the cost of hard-facing alloy and all labor charges. The hard-faced cams last for six months and are then merely rebuilt with more abrasion-resistant alloy for further service.

Another money-saving application for hard-facing has been discovered by a plant engaged in the manufacture of carpets and rugs. This company was troubled with the rapid wear of a ⅛-in. hole in a heddle or guide through which yarn travels at high speed. In a few weeks a deep groove was worn, and the yarn eventually caught and broke, thereby causing a complete shutdown of the loom to replace the parts and to make necessary readjustments and alignment. In an effort to increase the life of the heddles the wearing surfaces were hard-faced, and it was found that the work could be done for 15c. apiece, or but a fraction of the replacement cost of $4. Moreover, the hard-faced heddles lasted several times longer than the unprotected ones.

Excellent results have recently been obtained by a large textile manufacturing company from the hard-facing of cams and fallers used in their wool-combing machines. These cams, used to lift the fallers and to knock them down after they have passed over the top saddle, are subjected to much wear since they come in contact with the fallers about 100 times a minute. Previously, they have been case-hardened, and their average life in the machine has been no more than five weeks. After hard-facing the wearing parts, there was no sign of wear on either cams or saddles at the end of a similar period of time.

Briefly, hard-facing consists in applying by the usual welding methods a wearing surface of an alloy that is particularly resistant to abrasive wear. In the foregoing examples, a cobalt-chromium-tungsten alloy was used. The outstanding characteristics of this alloy are its extraordinary resistance to wear and the fact that it retains its original hardness practically unimpaired up to a red heat.



Hard-faced stitcher cam has remarkable resistance to abrasion

WILDNESS MUST BE AVOIDED IN

Finishing Pile Fabrics

By
Jack Jarmak

ALTHOUGH the supremacy of plush as the most desirable fabric for furniture upholstery often has been challenged by plain cloths, this material still retains its preeminent position. Plush combines a rich, lustrous appearance; comfortable resiliency; and remarkable durability. And it is to the combination of these properties that plush owes its appeal. This fabric, however, has certain peculiarities which the finisher must understand if he is to prevent avoidable seconds in its processing. Before we discuss the dyeing or finishing processes, it is well, therefore, to outline briefly the method of weaving this cloth.

Plush usually is woven on a double-shuttle loom. Ordinarily the cotton back consists of a black warp and red filling. The warp can be dyed with sulphur colors on a continuous warp dyeing machine; and the filling (in the form of ball warps) can be dyed continuously with naphthol colors.

The first half yard is generally cut from the loom and dyed by hand with acid dyes in order to detect any wrong ends in the warp. If a mistake has been made, the end is replaced by either a cop or bobbin. When a pick is broken, unless the weaver picks out to the same place on both the top and bottom pieces, a bar will show across either the top or bottom piece. "Wrong draws" and "wrong reed" are caused by the incorrect drawing-in of broken ends. The major difficulty in weaving pile fabrics is in the maintenance of an even pile on both the top and bottom pieces. The tension on the warp while beaming must be uniform, and the arbors on the warp beams must be perfectly true. Also the gears controlling the let-off motion of the pile warp must be screwed tightly to their shafts, and the cutting knife must be properly set and sharp at all times.

Mohair and wool have a tendency to lose their uniformity and "go wild" when agitated in hot solutions. This "wildness" occurs in the pile tufts, which will become permanently distorted during the scouring and dyeing processes unless proper precautions are taken. To set the pile, and thus prevent this distortion, it has been found expedient to steam the fabric before it is scoured. Therefore the first operation is to steam the goods on racks in closed chambers at 10 lb. pressure for 45 min.

Scouring can be carried out satisfactorily in an 8-box continuous machine, each box having a capacity of about 500 gal. The first two boxes contain water; the third and fourth, a solution of 12 lb. soap and 4 lb. of soda ash; the fifth and sixth, 4 lb. of trisodium phosphate; and the seventh and eighth, water. All eight boxes are maintained at a temperature of 120° F. The cloth is run through at a speed of about 14 to 15 yd. per minute, taking approximately 3 min. for the entire operation.

For dyeing the pile, lots of twelve pieces are processed in a vat having a capacity of approximately 3,500 gal. The weight of the lot varies according to the weave and construction, but usually ranges between 900 and 1000 lb. The percentage of dyestuff and assisting chemicals used in the bath is figured by weight. The amount of water used is in the ratio of 30 to 1 on the weight. As a general rule, fast-to-light acid dyes are employed. About 20% of glauber salt and 2% of sulphuric acid are added to the dyebath, together with 50 lb. of British gum to restrain the pile from "going wild." The cloth is entered into the dyebath at a temperature of about 120° F., which is raised gradually to 185 to 190° F. Next 5% of acetic acid or formic acid (depending upon the particular dyestuffs employed) is added to exhaust the dyebath. When dyeing is complete, the cloth is rinsed well and sent to the finishing room.

Since furniture upholstery is susceptible to damage by moths, it is considered advisable to subject the plush to a mothproofing treatment. A typical formula consists of: 42 lb. Eulan or a similar compound, 21 lb. sodium silicofluoride, 18 lb. sodium acetate, 10 lb. acetic acid, and 10 lb. formic acid. Enough water is added to give the solution a viscosity of 1.6° Tw. at 70° F. The first two constituents in the formula are mothproofing agents, the last three brighten and enhance the fabric. The cloth is run through a cold water bath and then into the above solution where it remains for approximately 15 seconds.

After the fabric has been mothproofed and dried, the pile is sheared to a uniform length. The final operation is laying the pile to a predetermined angle. This is done by passing the cloth over a stationary steam-heated drum which is almost completely surrounded by an adjustable shell. The distance between the shell and the drum may be regulated by setscrews. This distance governs the angle or lay of the pile. The cloth is then examined for imperfections, graded, and prepared for shipping.

Rayon Sizing . . .

COTTON SYSTEM AIDED BY DUAL DRIVE

By R. Robertson
Waypoyset Mfg. Co., Pawtucket, R. I.

SINCE the advent of rayon, the system for the preparation of the warp beam for the loom has been given much consideration. Previously, two systems—the silk and the cotton—had been in common use, and these formed the basis for establishing the rayon system. It was generally felt that the cotton system could not be satisfactorily followed for rayon. Therefore, as did many other textile plants, the Waypoyset Mfg. Co. proceeded on the basis of the silk system; and new equipment was installed for the sizing of rayon. This sizing process made the cost of producing the loom beam of rayon correspondingly higher than that for silk. Later, however, changes were made which made it possible to employ the cotton system for rayon. These changes involved an unusual drive application which will be described below.

The cotton system now employed is as follows: By means of a high-speed cotton creel and beam warper, approximately 1,000 ends of cotton are simultaneously wound from individual spools or packages onto a section beam at a speed of approximately 250 yd. per minute. The completed section beam may contain about 18,000 yd. per end. Because of the high speed, the number of broken ends contained in the finished section beam is relatively high. Assuming that 6,000 ends are required to make up the warp for the loom, it is now necessary to set up six section beams, each containing 1,000 ends, and rewind on a slasher, bringing the total of 6,000 ends onto a warp beam.

When first installed to operate on the silk system, the new rayon slashers were driven by a constant-speed motor and a mechanical variable-speed drive to take care of different grades of goods. Since a broken end is rarely encountered in the warp beam made on the silk system, it was not necessary that a slow or creeping speed be provided.

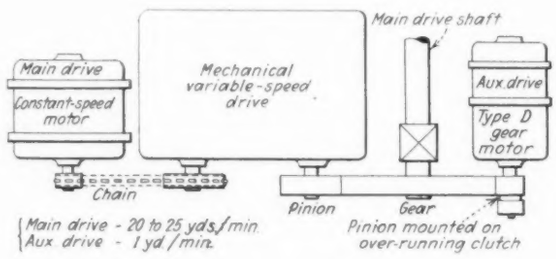
Cotton slashers, on the other hand, generally are belt driven from a lineshaft, with provision for slow-speed operation by means of belt shifting from the normal-drive pulley to a pulley driving through a set of back gearing. The slow speed is essential on account of the relatively large number of broken ends contained in section beams and the necessity for correcting the breaks without stopping the process. If the machine were stopped, the effect of improper sizing would appear in the woven fabric.

To adapt the rayon slasher for sizing rayon made up in section beams from the cotton-type creel and beam warper, it was necessary to incorporate a slow creeping speed, for the same reason as described for the cotton slasher. Stands, for the several heavier section beams to be used, were readily constructed. To secure the creeping speed required, the Westinghouse Electric & Mfg. Co. was called upon to furnish a modification of one of its standard gearmotors for the purpose. This drive consisted of a small Type D double-reduction gearmotor, on the output shaft of which was mounted a Micarta pinion carried by an over-running clutch. The drive was arranged so that this pinion meshed with the gear normally driven from the variable-speed drive and the main drive motor.

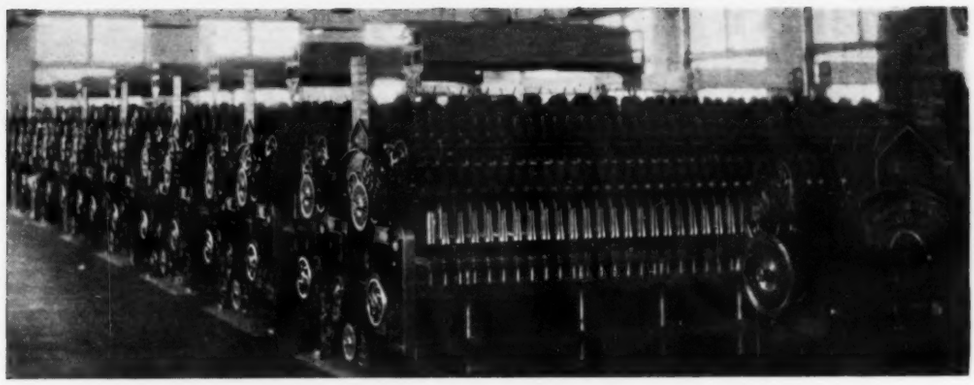
During normal operation, power is supplied to both motors. The auxiliary gearmotor, however, under this condition, is idling, due to the fact that the "free wheeling" pinion is being driven from the main drive gear at a speed much higher than the normal output speed of the gearmotor. In other words, the Micarta pinion is over-traveling its shaft. When a broken end appears, the operator pushes a "Stop" button at one of several convenient pushbutton stations. This cuts off power to the main motor, and immediately the machine slows down to the point where the "free-wheeling" pinion no longer over-travels and where the gearmotor carries the creeping speed load. It is to be noted that the creeping speed is constant and independent of the speed at which the normal drive may be operating. As soon as the break has been repaired, the operator presses a "Start" button, and normal operation is immediately resumed.

As was mentioned previously, in the cotton system of warping, the supply of yarn on the creel consists of about a thousand large individual spools or packages, the end of each package being attached to the end of a second reserve package to insure continuity of supply when the first package runs out. Three employees operate the creel, two non-skilled operators are kept busy replacing empty packages, while a third operates the beam warper and picks up broken ends.

While the auxiliary drive addition was made on the rayon slasher, it is apparent that the increase in production was not accomplished by a speeding up of this machine. Rather, changes were made so that the large beams produced by the high-speed cotton system could be used instead of the single loom beams more tediously produced under the silk system. However, as with the cotton slasher, fewer set-ups are made, since twenty loom beams may be run off from a set of six section beams. The savings were such, that after a few weeks' operation on one machine, additional installations were made. Of interest, too, is the fact that the rayon slasher may now be adapted to sizing cotton as well as rayon. From the maintenance standpoint, it is interesting to note that after ten months' trouble-free operation, a careful inspection revealed no indications of wear in the auxiliary drive.



Dual drive arrangement on warp sizer



Oiling Schedules

By Alfred Heaton
Consulting Textile Engineer

IN THE COMPOSITE WORSTED MILL

DAILY: In morning, (1) oil all spindles and (2) oil all front rollers and bearings. In afternoon oil all spindles.
MONDAY: Oil all back rollers and joints.
TUESDAY: Grease all front- and back-roller bearings and all carrier bearings.
WEDNESDAY: Oil lifter motion throughout and lifter rods.
THURSDAY: Oil all twist studs and loose pulleys.
FRIDAY: Oil traverse motion throughout and all cylinder bearings.
ONCE EACH MONTH: Touch all spindle ends with oil brush.

◆ *This is one of a series of articles by Mr. Heaton discussing the best methods employed by some twenty leading worsted-spinning plants. Others appeared in the September, November, and January issues.*

IT has often been said that more machinery is ruined by the lack of oil than by all other causes put together. This may or may not be true. However, in the worsted business the final consequences of this lack of oil reach at times far beyond the mere machinery-replacement costs.

The writer's attention was called at one time to a comparatively small and modern plant which for several months had been experiencing difficulty in its spinning department. Because of this difficulty, a drawing overseer had been replaced, the labor turnover had been very large, and the quality of the yarn had been affected by the numerous piecings, despite the fact that the mill had been using quality in top beyond the ordinary requirements. In addition to all this, a tremendous amount of waste had been made.

Unreasonable as it may seem, on one side the writer actually counted 84 nicked caps. In the entire department of between twenty and thirty frames of 200 spindles each about 40% of the caps were found to be nicked. It developed that the caps, sticking slightly and impeding the progress in doffing, had been scored on the edges by the doffers in attempting to dislodge them. Fundamentally, this condition had been brought about by the lack of oil. No one could remember when the spindle ends had been touched with an oil brush. And incidentally, when this is attempted, unless the cap is entirely removed, the entire side of ends will be broken by oil on the outside of the cap.

Another part of the spinning frame which is often neglected with occasionally disastrous results is the traverse motion. This neglect is seldom if ever discovered until each and every top leather roll has become badly grooved. The yarn on the side can of course be made into waste, but it sometimes happens that part of this bad-roller yarn has gone with the previous doff to the twisting or weaving departments, and its recovery is difficult indeed.

The lower front-roll bearings are undoubtedly subjected to more wear than any other part of the frame. In fact, to offset the effects of wear somewhat at this point, an experienced mechanic, when realigning and leveling the frame, always leaves this bearing about 1/16 in. high in comparison with the back roll and carrier bearings. Should the lubrication of any one of these bearings be neglected, the bearing will quickly wear out, thus permitting the front rolls to run out of line—and these rolls have been known to crystallize at the joints for this reason. Then again, this bearing can become heated by the front roll running dry to the point where it will leave its seat in the roll stand and follow the roll right around.

A great many difficulties of this sort can be largely avoided by the adoption of a thorough oiling arrangement, and to that end the suggestion is offered that the oiler boy be trained to follow a chart similar to the accompanying one, which can of course be changed to meet the different requirements.

Spinning overseers as a general rule have a multitude of things to remember; and a copy of the suggested cleaning (TEXTILE WORLD, January, 1934, page 68) and oiling charts, placed in a prominent location, helps considerably to remind them to check up and determine that each operator cleans faithfully and that the oiling schedule is being followed.

THIS DEPARTMENT

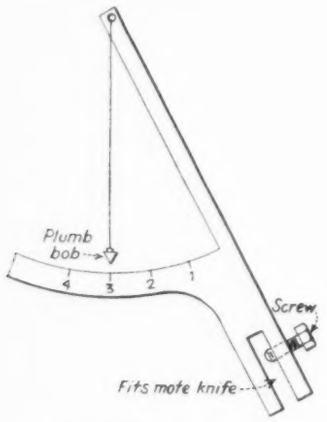
Offers every other month a collection of practical suggestions for meeting many of the miscellaneous problems which arise in textile mill operation. Readers are cordially invited to contribute, and published kinks will be paid for without regard to length. Brevity is desirable. Additional payment will be made for diagrams or photographs.

▼

Kinks and

Setting the Angle of Mote Knives

The angle gage shown in the illustration is becoming part of the equipment in the tool box of the most efficient cotton-card grinders and fixers. This gage is merely an idea obtained from the comber fixer's tool box, but it is made to fit the mote knives on a card instead of the top comb of a comber. The idea has been used for several years by a



few card grinders, but it is now becoming more common.

The angle of the mote knives controls the amount of hulls, seed, leaf, dirt, and heavy matter taken out more than the average carder realizes, unless he has experimented. High-speed licker-ins should have a different angle of knives from low-speed licker-ins.

On the gage shown, numbers merely are used and angles are not given. One machinery manufacturer has in years past made this type of gage for mote knives with the angles shown, but grinders are making their own and merely use numbers or grooves.

J. L. Tucker.

Changing Over Long-Chain Quillers

The average quiller tender loses much time in changing over from right to left twists, singles to plies, etc., due to the fact that one end of left twist cannot be twisted to one of right, as the twist runs out of the yarn. The general procedure is to strip out the quiller and reed in the new chain, wasting about 4 hr. The following method has proved to be a great time saver. In changing from single to ply, two old chains are run on to the stretch and two ends of the old warps are twisted to one end of the warp in the reed at the lease sticks. The single is run up so that the twist-over is near the bobbins, and the bobbins are doffed. The double ends are cut off at the lease rods and one end of the new chain is twisted to the two ends in each dent in the reed. The yarn in between the two twist-overs is run on to the whorl—or in the case of coarse yarns, onto the empty bobbins—and doffed off. In place of a 4 hr. loss in production, only time for two twist-overs and one or two doffs is lost; this should not amount to an hour for an experienced quiller.

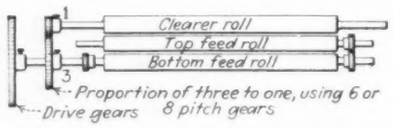
Bearings for Tenter Frame

On a swing-frame tenter, where the machine was housed throughout almost the entire length, and where inside temperatures ran to 325° F., the plain, cast-iron bearings on the width adjusting shaft could not be satisfactorily lubricated and frequent renewals were necessary. New stands were designed to take a cheap ball bearing which is never lubricated. No renewals have yet been made after more than a year of service, whereas plain bearngs were renewed every two months. The old, plain-bearing stands cost around $1 each, while the new stands cost practically the same without the ball bearings which cost 60c.

H. H. Iler.

Fine and Heavy Ends in Wool

With an Apperly feed, when running heavy work consisting of a high percentage of long fibers, trouble is often encountered with the top feed roll winding. This results in fine and heavy ends and finally a "choke up." In such cases,



the ordinary clearer rolls and gears will not work satisfactorily. The trouble may be eliminated by using a clearer roll of about the same diameter as the feed roll, as shown in the accompanying illustration. The clearer roll has a long shaft with a gear on one end and is driven by a gear on the bottom roll in the ratio of three to one. P. M. Crofts.

Reclaiming Rusted Needles

To reclaim rusted needles the following procedure may be followed:

Take an ordinary 5-lb. dye can (with removable lid) run a ⅛- or ¼-in. rod diagonally through the can from corner to corner, and solder well. Next fasten the rod in a frame and place a large pulley on one end (a drive pulley for a sewing machine transmitter will do if handy), arranging a drive so that the can will revolve not over 120 r.p.m. Put your needles in the can together with brass lathe turnings and small bits of leather from old belting and run until sufficiently smooth. G. W. Sheeley.

Trouble at the Tape Condenser

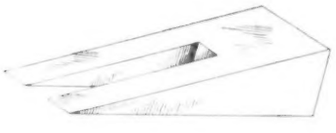
In a mill in which the cards were equipped with tape condensers trouble from uneven yarn occurred frequently. All the usual points were checked, and everything was found to be in perfect order. Careful reeling of the yarn proved that adjacent threads were varying, although the leathers of the tape condenser were found to be in good shape and the tension applied was considered adequate. It was realized, however, that many lengths of leather are used in making one endless band and that leather can vary in density. The machine stood on a concrete floor, and it was discovered that the system of room heating did not give a uniform temperature at all parts of the tape condenser, the part nearest the cold floor being cooler than the rest. A steam pipe was laid under the condenser in order to keep it at a more uniform temperature. As a result, the tape leathers no longer contracted or expanded, the tension applied to them remained constant at the cutting point, and the trouble due to uneven yarn was at an end.

Norman Booth.

Removing Stubborn Bolts

Fixers and section-hands sometimes run up against a bolt that turns so that the nut cannot be removed. Often the bolt is in a somewhat inaccessible place, difficult to get at, and, furthermore, may be so located that a second person can be of no assistance. The usual procedure is to jam a screwdriver under the head and press the screwdriver against the framework and bolt as the nut begins to come loose. Wood- and metal-work are thus often badly damaged.

The splined or slotted wedge shown in the accompanying illustration was developed especially for such cases. Its thin edge is inserted under the bolt head and then kept tight by tapping the back side with a hammer. The straight, bottom portion prevents damage to the surface on which it rests, and the inclined



Wrinkles

plane keeps the bolt tight, so that the nut can be readily loosened. The wedge can be made any size that will most suitably take care of the bolts on machines in a section or room. The original wedge was made from wrought iron. L. L. K.

Effectiveness of Scouring Agents

I have found that there is a definite relationship between the removal of sizing from cotton gray goods and the scouring of synthetic yarns to the point where they are absorbent. Cotton gray cloth, with its high percentage of sizing content, is being used as a standard measuring stick for finding out the effectiveness of scouring agents, because of the practicability of computing the loss of weight after scouring. The scouring agent which removes the most sizing makes synthetic yarn fabrics the most absorbent.

Keyways for Twist Gears

On those spinning or twisting machines which have the twist gears *TW* secured to the gear stud *GS* by means of a pin *P* (Fig. 1a) there is a tendency in the course of time for the pin to wear and eventually to shear off. This is due to the torsion of the shaft acting against the load on the twist gear. At first the slippage of the gear on the stud is slight, and only a minor retardation is reflected in the movement of the front roll. In a short time, however, a more rapid slippage ensues, causing a

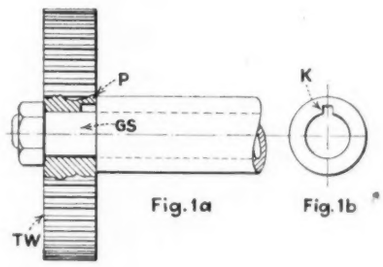


Fig. 1a Fig. 1b

decided increase in the twist in the yarn for the period of the slippage. The length of yarn thus over-twisted may be short at first; but it increases as the slippage becomes more pronounced, until finally the gear can no longer be driven. As a result, the front roll does not revolve, and the yarn is twisted until it snarls excessively or even breaks. The waste of yarn, extra time required to repair the faulty bobbins, and the inevitable loss of some production are obvious. We found that we could remedy this undesirable condition by cutting a keyway *K* (Fig. 1b) right through the gear and fitting a key to the gear stud. In an emergency, a fairly permanent repair can be effected by inserting a series of pins, instead of a key, on the gear stud. L. L. KINGSFORD.

Keeping Transfer Irons Clean

The faces of hosiery transfer irons have a way of getting gummed up with ink from the transfers. This makes clear impressions practically impossible. To prevent this difficulty, polish the face of iron with fine emery cloth. Heat the iron and apply a coat of paraffin. If the paraffin is applied twice daily, the iron stays smooth and does not pick up the ink.

FRANK S. WEBSTER.

Care of Tenter Chains

Tenters have been speeded up considerably during the last few years, and this shortens the life of the chains. We have found that it is good practice to have a steam jet set on each chain and to blow down the chains once a week. The chain should be thoroughly dried after cleaning, and a good grade of non-fluid oil put on the rivets sparingly. When a new chain is put on, it is also necessary to put on new openers.

Yarn Breakage in Knitting Tricot

We were both making the same quality of tricot cloth with one full set beam of 20/22 silk and one of 75-denier rayon. The weaver on the machine next to mine asked "How is it that I am carrying twice as much tension on my beams, although we are both on the same quality and have the same length of rack?" One old fellow who overheard the question spoke up: "Examine your take-up on the knockover." We followed his advice, and found that the machine carrying the least tension had the deepest knockover. After setting the needle bar lower, my neighbor had to take off the excess weight. Our two machines were then identical. The excessive tension had been causing the yarn to break frequently; and the old-timer's suggestion put an end to that trouble. E. M.

Preventing Mildew on Silk

Where silk for hosiery knitting is not treated with a mildew-retarding agent in the soaking operation, the possibility of mildew growing in greige hosiery is practically eliminated by dissolving a 5-grain tablet of mercuric chloride in each gallon of water as used in the damp boxes on the knitting machines or in wetting-out troughs. The operator should be cautioned that these tablets are poisonous.

DALE S. CHAMBERLIN.

NEXT MONTH—

The "Overseers Round-Table" will appear in this space with a new discussion and with readers' comments on the question of curtailment and the overseer's pay, which was opened for discussion in the February issue. "Kinks and Wrinkles" and the Round-Table will continue in alternate months.

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Weaving Cotton Plush

Usually low-priced, plain, cotton plush is woven on a double-shuttle loom with three ends per dent. A standard construction is shown in the accompanying

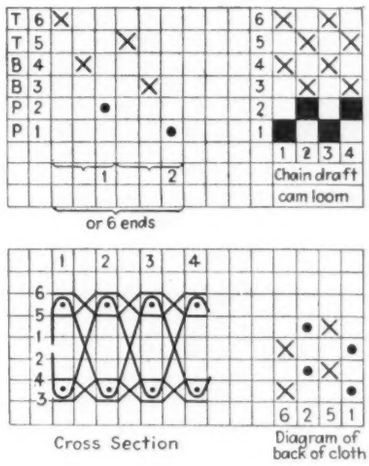


illustration. This method has several objections and we have found that a firmer fabric can be produced at a lower cost by using four ground ends and two pile ends per dent. Best results are obtained by employing a double reed with the dents staggered. There are however one or two little tricks to be mastered before one can use this method. After the ends have been drawn through the reed, about 12 in. of cloth should be woven. It will be noted that about half of the reed space is weaving perfectly and the other half is rolling.

The next step is to remove all the ends from that part of the reed which is not weaving correctly, leaving the rest of the ends in the reed. Next take the first pile end in the harness which has been pulled out of the reed and take it out of the heddle eye. Now place this end next to the last pile end remaining in the reed. Two ground ends are now worked over, then the next pile end, and so on. The reason that half of the reed was not weaving perfectly at the start was due to the fact that the pile ends in this section were working on the wrong side of the ground ends. When they have been changed over to the right side no similar difficulty will be encountered.

GHENT R. ROBERTSHAW.

THE PERSONAL PAGE

Alfred E. Colby, treasurer of the Pacific Mills, Boston, was also elected president of the company at the annual meeting, held March 20. As president Mr. Colby succeeds **Robert F. Herrick** who was elected chairman of the board. **William G. Smith,** clerk of the corporation, was elected a member of the board of directors.

Lawrence Richmond, treasurer of the Crompton (R. I.) Co., has been appointed as a representative of the employers on the Cotton Textile Industrial Board for Rhode Island.

Robert H. Gillespie has been succeeded by **William G. Ewald** as president of L. & E. Stirn, N. Y. **H. G. Kaupe,** assistant treasurer, has been named treasurer to fill the vacancy caused by Mr. Ewald's promotion.

Mrs. Marie P. Cadgene was elected to succeed her husband, the late **Dr. Ernest Cadgene,** as president of the Lyons Piece Dye Works, Paterson, at a meeting held March 20.

William G. Ashmore, a graduate of Clemson College with both textile and journalistic experience, is now southern editor of TEXTILE WORLD with headquarters at our southern office in the Woodside Building, Greenville, S. C. **Ralph C. Maultsby,** who has been our southern editor for the last five years, is now on the business staff of TEXTILE WORLD, covering Philadelphia and adjacent territory with headquarters at 16 South Broad Street, Philadelphia.

Frederick T. Vilmar, formerly sales manager, upholstery division, L. C. Chase & Co., has become sole sales agent for the Philadelphia (Pa.) Tapestry Mills and Philadelphia Pile Fabric Mills, divisions of the Artloom Corp.

Walter H. Weber, for twelve years general manager, and for the past five years, general manager and president of the Astoria Silk Works, Long Island City, N. Y., has joined Scheuer & Co., N. Y., in the synthetic yarn department.

G. S. Davenport succeeds **F. W. Nash** as a representative of Merrill, Lynch & Co., on the board of directors of the Davenport Hosiery Co., Chattanooga.

C. C. Duncan, formerly superintendent of the spinning division of the Appleton Co., Anderson, S. C., has resigned to accept the position of superintendent of the Pendleton, S. C., plant of the Gossett Mills. **J. Westmoreland,** superintendent of the Williamston, S. C., plant of the Gossett Mills has resigned and has been succeeded by **T. H. Wood,** formerly superintendent of the Pendleton, S. C., plant of the company.

D. H. Mauney, secretary and treasurer, Long Shoals Cotton Mills, was elected president of Mauney-Steel Co. at the annual meeting; **Phil Steel** was elected treasurer and general manager; **J. C. Craig,** vice-president; **D. A. Rudisill,** secretary; **J. M. Matlack,** assistant treasurer.

William W. Quinton, former executive of the Amoskeag Mfg. Co., Manchester, N. H., has been appointed general manager of the Stevens Textile Mfg. Co., Fall River, Mass. **Richard K. Haines** is president and **John L. Patterson,** Richmond, Va., is vice-president. The Stevens Textile Mfg. Co., recently acquired title to the Stevens Mfg. Co.

J. T. Huneycutt has been made superintendent of Bladenboro (N. C.) Cotton Mills.

E. J. Wentz, formerly overseer of the No. 4 weave room, largest weave room of the Riverside & Dan River Cotton Mills, Danville, Va., has been appointed general superintendent of the Oneida Cotton Mills, Graham, N. C.

W. L. Clement, Jr., has been appointed superintendent of Pomona Mills, Greensboro, N. C., to succeed **D. J. Ashmore,** who resigned.

Frank E. Battles, stock superintendent at the Worumbo Mfg. Co., Me., was given a farewell party before leaving for the Black Bear Woolen Mills, Inc., Proctorsville, Vt., where he has assumed the duties of superintendent. He is succeeded at Worumbo by **Robert A. Whittier.**

J. M. Harris, manager of the silk department of Newlands & Co., Ltd., Galt, Ont., since 1928, has resigned to take over the management of the throwing department of Allen-A Co., Kenosha, Wis., a department recently established.

Murray Field has resigned as superintendent of Lillian Knitting Mills, Albemarle, N. C., to accept the superintendency of McLauren Mills, Asheboro, N. C.

Karl Baberadt, general mill manager for Louis Roessel & Co., Inc., Hazleton, Pa., since 1923 has resigned that position.

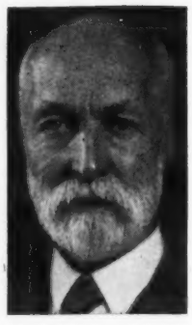
John T. Wigginton is now superintendent of Edna Mills Corp., Reidsville, N. C.

E. L. McElveen has returned to his old position as superintendent of the Adams-Swirles Cotton Mills, Macon, Ga., succeeding **H. L. Pruitt** who recently resigned.

W. N. Thomas has been appointed superintendent of spinning plant, Dixie Mercerizing Co., Chattanooga, Tenn., succeeding **Thos. B. Moore,** recently resigned.

James H. Catlow, formerly with Edward Bloom Co., New London, Conn., is now overseer of weaving at the Warwick (R. I.) Mills.

Frohman Fiedler has been appointed fancy worsted designer of the Wood Worsted Mills, American Woolen Co., to succeed **Kendall T. Greenwood** who has gone with the Goodall Worsted Co., Sanford, Me.



Frederic H. Bishop, vice-president and a director of the Universal Winding Co., Boston, and dean of textile machinery men, retired from active business on the occasion of his 85th birthday late last month. Mr. Bishop started his career with J. R. Leeson Co., thread importers, and became sales manager. When Mr. Leeson and associates started the Universal Winding Co., about 1891, Mr. Bishop became general manager. He was one of the organizers of the Textile Exhibitors' Association and its first president. Mr. Bishop is a veteran of the Civil War and last year was elected Commander-in-Chief of the Massachusetts Department of the Grand Army of the Republic. He intends to devote a considerable portion of his time to the affairs of G.A.R. Veterans, but will also keep in touch with the business of the Universal Winding Co.

F. F. Stafford, son of one of the founders of the Cleveland Worsted Mills, Cleveland, O., resigned as a director at the annual meeting of stockholders and directors Feb. 28. His place was taken by **E. S. Hanson,** vice-president of the Central United National Bank. **George H. Hodgson** was reelected chairman of the board.

Dr. M. A. McCall, in charge of the Division of Cereal Crops and Diseases, has been placed also in charge of the cotton and other fiber investigations of the Bureau of Plant Industry, U. S. Department of Agriculture.

Henry Coslow, formerly with the Waterhouse Worsted Co., W. & K. mill, has become associated with the sales force of the Lippitt Woolen Co.

G. G. Wyrick has resigned as manager of Hickory (N. C.) Hosiery Mills and will be succeeded by **J. Y. Dell,** formerly with Superior Hosiery Mills, Lexington, N. C.

Irwin C. Schumacher, manager of Bliss, Fabyan & Co.'s Philadelphia office, is president of the newly formed Association of Philadelphia Representatives for Textile Mills.

Carl S. Zoch has resigned as New York sales manager for Joseph Bancroft & Sons Co., after 27 years' association with that company.

R. T. Smith, formerly superintendent of Bladenboro (N. C.) Mills, is now superintendent of American Cotton Mills, Inc., Bessemer City, N. C. **J. T. Huneycutt,** formerly of Faytex Mill, Fayetteville, N. C., has been made superintendent of Bladenboro Mills.

C. L. Still, who has been superintendent of the Springs Cotton Mills No. 1, Fort Mill, S. C., has been promoted to assistant general manger of the Fort Mill plants. **E. L. Cantrell** has been promoted from overseer of weaving to superintendent of the No. 1 mill.

G. H. Smith is now general superintendent of Hart Cotton Mills, Inc. and Fountain Mills, Inc., Tarboro, N. C.

R. G. Blake has resigned as superintendent and designer of the Gordon Woolen Mills, Inc., Newport, N. H., after eight years of service.

Herbert Whitehouse is now assistant superintendent of A. G. Dewey Co., Quechee, Vt., having resigned from Gordon Woolen Mills, Newport, N. H.

Lloyd Ott is now general superintendent of the carding division of the Bath, S. C., plant of the Aiken Mills, Inc. He was formerly superintendent of the carding division of the Graniteville (S. C.) Mfg. Co.

W. R. Barnett, formerly superintendent of the Clanton, Ala., plant of the Alabama Mills Co., has resigned and accepted the position of superintendent and manager of the Walcott & Campbell Spinning Co., Gulfport, Miss.

J. W. Starnes, formerly assistant superintendent of the Spencer Corp., Spindale, N. C., and departmental superintendent of the carding and spinning divisions of the same company, has accepted the position of superintendent of the Pisgah Mills, Inc., Brevard, N. C. For the last year he was associated with a mill at Belmont, N. C.

Aubrey Peters, of the Cornwall & York Cotton Mills Co., St. John, N. B., has been transferred to Cornwall, Ont., where he will take charge of a department in one of the cotton mills operated by Canadian Cottons, Ltd.

Obituary

William H. McLellan, aged 60, vice-president and general manager of the Alden Mills, New Orleans, since 1892, died on March 22.

Roger N. Kimball, Sr., president, Allen-A Co., Kenosha, Wis., and long prominent in the hosiery industry, died April 3.

Osborne Brown, aged 64, treasurer of the Long Island (N. C.) Cotton Mills until the plant was sold to the Duke Power Co., in 1930, died on March 22.

Charles A. Jensen, aged 47, vice-president of the Ames Worsted Mill, Lowell, Mass., and selling agent for three other mills belonging to the Stevens interests, was killed in an automobile accident in New Jersey on March 12.

Serafin Uberti, aged 65, president of the General Piece Dye Works, Paterson, N. J., died on March 8.

Seth A. Borden, former treasurer of the Parker and the Hargraves Mills, Fall River, died in Florida March 21. He retired about ten years ago.

Edgar Hilscher, for ten years in active charge of the G. Hilscher plant in Chemnitz, Germany, and a grandson of the founder, was killed in an airplane accident on March 18, according to the Grosser Knitting Machine Co., American agents for the concern.

Ira B. Grimes, aged 53, vice-president of the Callaway Mills, LaGrange, Ga., died at his home in LaGrange recently.

James W. Brown, aged 56, former president of the Cowpens (S. C.) Mfg. Co., died recently in Spartanburg.

Victor P. Sahner, Jr., aged 46, representative of Henry J. Tully & Co., knit goods, New York, was killed in an automobile accident April 3 in southern Indiana. Like his father, Victor P. Sahner, Sr., he had spent his entire career in the selling end of the knit goods business.

Herbert W. Fox, aged 60, formerly vice-president and treasurer of LaPorte (Ind.) Woolen Mills, died April 7 at Santa Barbara, Calif.

Galen M. Harris, a director of Worumbo Mfg. Co. and associated with that company since 1903, died recently at his home in Pelham, N. Y., aged 53.

Horatio Hathaway, aged 64, president of Wamsutta Mills, New Bedford, and formerly head of Hathaway Mfg. Co. and Acushnet Mills, died April 2.

Frederick W. Snelgrove, chief chemist, Courtaulds, Ltd., of Canada, since 1925, died recently in Toronto.

William W. Stanton, aged 43, superintendent of the Lewiston, Pa., plant of the Viscose Co., died March 21.

John M. Lumley, aged 66, for 21 years superintendent of the Henrietta Mills, Caroleen, N. C., and for several years head of the Ellenboro Mfg. Co., died on March 24.

Frank Baldwin, aged 58, superintendent of the worsted-yarn department of the Amoskeag Mfg. Co., Manchester, N. H., died on March 22 in Colombia.

Dinner to Celebrate 50th Anniversary of E. W. France

The fifth anniversary of the founding of the Philadelphia Textile School and of Director E. W. France in the service of that institution will be celebrated with a National Textile Testimonial Dinner to Dr. France on Thursday, April 26, in Philadelphia.

The committee in charge comprises the following:

E. B. Moore, Penn Worsted Co., Philadelphia, temporary chairman; T. B. Hayward, Swift & Co., Philadelphia, secretary-treasurer; Col. C. F. H. Johnson, Botany Worsted Mills Co., Passaic, N. J.; Lewis Hird, Samuel Hird & Sons, Inc., Passaic, N. J.; H. H. Schell, Sidney Blumenthal & Co., New York; Charles B. Bennett, Bennett Mills, Philadelphia; Thurmond C. Chatham, Chatham Mfg. Co., Winston-Salem, N. C.; Robert C. Boger, Boger & Crawford, Philadelphia; Bradley C. Algeo, president of the Alumni Association of the Philadelphia Textile School.

Headquarters for the Committee is at 308 Chestnut Street, Philadelphia, Pa. Speakers of national prominence will be obtained. The alumni are combining their annual banquet with this event.

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Laboratories Oppose Code

Disapproval of the latest draft of the "Proposed Code of Fair Competition for the Commercial Testing and Research Laboratory Industry" was voted practically unanimously by members of the Association of Textile Laboratories and Technologists present at the regular April meeting in New York. Grounds for complaint are that the proposed code would hamper the rendering of prompt and efficient service to clients experiencing trouble in their manufacturing operations and would in several respects place the smaller concerns at a disadvantage. Other business of the meeting included the establishing of a raw-silk division of the association to permit laboratories specializing in that field to work in closer cooperation.

Textile Calendar

American Cotton Manufacturers Association, annual meeting, Hotel Francis Marion, Charleston, S. C., April 18 to 20, 1934.

Knitting Arts Exhibition, Commercial Museum, Philadelphia, April 23 to 27, 1934.

General meeting, hosiery industry, Philadelphia, April 23, 1934.

Textile Institute and Style Show, Textile School of North Carolina State College, Raleigh, N. C., April 26, 1934.

National Association of Hosiery Manufacturers, Annual Meeting, Commercial Museum, Philadelphia, April 26, 1934.

Eastern Carolina Division, Southern Textile Association, divisional meeting, N. C. State College, Raleigh, N. C., April 26, 1934.

National Cotton Week, May 14-19, 1934.

Committee D-13 American Society for Testing Materials. Annual Meeting, Chalfonte-Hadden Hall, Atlantic City, N. J., in week of June 25 to 29, 1934.

Southern Textile Exposition, Eleventh Annual Exhibit, Textile Hall, Greenville, S. C., Oct. 15 to 20, 1934.

American Society of Mechanical Engineers, Textile Division, meeting with Greenville Section, Greenville, S. C., Oct. 15, 1934.

Federated Textile Industries, Inc., successor to Silk Association of America, Annual Dinner, Waldorf-Astoria Hotel, New York, Feb. 28, 1935.

Flax Study Started

Because of the recent revival of interest in flax possibilities, the Textile Foundation has launched a series of investigations and experiments in connection with this fiber, ranging through the field of production, machine and chemical preparation, utilization in the manufacture of paper, and the production of linen fabrics on cotton mill machinery. H. H. Willis, dean of the Textile School of Clemson College, will devote part of his time to correlating these activities.

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Used Machinery Code

The NRA code for the used textile machinery and accessories distributing trade has been approved by General Johnson. It provides for a 40-hour week and minimum wages of 40c. an hour in the North and 35c. in the South; effective April 15.

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German Import Decree

A German Government decree prohibits purchase abroad of textile raw materials between March 24 and May 5, 1934, to counteract growing trade-balance deficit and shrinking of gold reserves, according to cablegrams received in the Department of Commerce.

QUESTIONS AND ANSWERS

Humidity Control in Woolen Mills

Technical Editor:

We would appreciate some information in regard to humidity control in woolen mills.

What is the relative humidity for wool spinning, wool mixes, etc.? What is the relative humidity for weaving cotton-warp wool-filled goods, and would this vary on weaving goods wool-warp wool-filled?

Our spinning-room overseer is of the opinion that his work seems to run better in extremely dry weather, whereas our weave room overseer undoubtedly gets better results in very damp weather. We can see where work would naturally weave better in damp weather, but could it be possible that wool tends to spin better in very dry weather? (8079)

The control of humidity in spinning woolen yarn involves a number of factors. Usually a relative humidity about 10% lower than in the card room is recommended; i.e., about 55 to 60%. The temperature ordinarily desired is 75 to 80° F. It is desirable that moisture be given up from the wool while it is being spun; and the type of emulsion and percentage applied to the stock in the picker must be taken into consideration. As a rule, woolen yarns will spin better on damp days; however, if an excessive amount of emulsion is employed, it is possible that the wool might spin better on a dry day.

For weaving cotton-warp, wool-filled goods, a relative humidity of 70 to 75% and temperature of 70 to 75° are recommended; for wool-warp, wool-filled fabrics, a relative humidity of 55 to 65%.

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Polishing Cord

Technical Editor:

We are anxious to produce polished cord similar to the laces inclosed. We have no difficulty in braiding the necessary cord and piece dyeing the same; the trouble is that we cannot get a satisfactory method of polishing. Builders of bobbin-to-bobbin thread-polishing machines state that their equipment is scarcely suitable for this class of work. Manufacturers of skein polishing machines have informed us that they have no equipment which they can recommend. Are you able to inform us what style of machinery is best for this work and also what are the ingredients used for the polishing? (8091)

We know of no reason why these laces cannot be finished on a common bobbin-to-bobbin glazing or thread-polishing machine. The only difficulty that might possibly be encountered would be in drying the material. The machine should be run as slowly as possible; and if the material does not then dry sufficiently, it may be run directly onto a drum consisting of wire netting (chicken-wire). This

method is similar to that employed in drying the varnish on the better quality fishing lines.

The formula employed in finishing the samples you inclosed seems to be a light mixture of soluble wax and soluble potato starch. The density of the texture precludes the possibility of the material picking up a great amount of the sizing solution. Hence the problem of drying and polishing should not be as great as might be expected.

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Defect in Rayon Taffeta

Technical Editor:

We are inclosing a swatch of 84x60 taffeta made from high-luster, 40-filament, 150-denier yarn in the warp; and 150-denier, 40-filament, low-luster yarn in the filling. We shall appreciate your opinion as to the cause of the thin spots in the warp. (8063)

We believe that your trouble is due largely to a saggy reed or to lame dents. We advise you to check the condition of your reeds and to make certain that the yarn is uniform. Defects of this nature are accentuated by use of improper sizing materials, and you may find it necessary to make a change in your sizing formula.

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Sizing Silk Crepe

Technical Editor:

We understand that in the manufacture of silk crepe the warp is usually two or three ply. The two or three ends are not twisted, but are drawn through one heddle eye. Warp breakages could be reduced from one-half to one-third if it were possible to bind together these two or three ends. The difficulty of sizing silk without spoiling its elasticity is an obstacle which has not been overcome thus far. We should like you to confirm this. (8093)

Some years ago a few mills experimented with the sizing of silk crepe warps, but found that it was not practical. In the first place, trouble was encountered in obtaining a uniform finish. It was also found that sizing did not improve the weaving of the silk, and a number of the double ends broke out, thus causing imperfections and a decrease in production. With silk of high grade, warp breakages are very few; and piece after piece can be woven without the breaking of any double or triple ends if the loom is in perfect running order. On the other hand, a few of the double ends break single; but this does not cause imperfections. This is due to the way the warps are reeded and entered and to the fact that the weaver can tie the broken end without stopping the loom.

Today a number of mills are using a solution that is similar to a size, but is sprayed on the warp while the warp is in the loom. Mills using this method find that it eliminates a number of imperfections due to fuzz and small floats.

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Hosiery Costs

Technical Editor:

Will you kindly advise me as to the cost of manufacturing 45-gage, 4-thread, all silk stocking; a 45-gage, 4-thread, silk welt stocking with plated heel and foot; a 42-gage, 7-thread stocking with a cotton welt and foot, and a 42-gage, 7-thread stocking with a cotton welt and plated foot. These figures are not to include overhead; only the cost of material and labor and, if possible, the cost and the grade and weight of material used per dozen pairs. (8065)

There are no fixed standards of manufacturing so far as full-fashioned hosiery is concerned. Therefore any figures which can be given will be approximate costs.

A 4-thread 45-gage stocking should be made of a quality of silk not below 83% and preferably 85%. It is desirable that it have a plated high-spliced heel and double sole and toe. Reinforcing threads may be 100/2 or 120/2 mercerized cotton. The stocking may be pure silk throughout with 4/6-thread used for reinforcing in heel, sole, and toe. When reinforced with cotton, such a stocking would carry 10½ to 11½ oz. of silk and 1½ to 2 oz. of mercerized yarn per dozen. If made entirely of silk, it would carry from 12½ to 13 oz. of pure silk. At this writing raw silk of 83% quality is priced at about $1.60 a pound, to which a throwing cost of around 90c. per pound will have to be added, bringing the total cost of silk to $2.50 per pound. Direct labor cost; that is, piece prices, on such a stocking would range around $1.45 per dozen. This figure does not include indirect labor, day labor, or overhead of any kind. Neither does it include such items as dyestuffs, machinery supplies, cases and packing, seconds, and waste. These items, including overhead, vary greatly, but we believe they will average not less than $2. per dozen. Adding the different items together, we have a total of $3.45, to which will be added the price of silk based on $2.50 per pound for raw silk and throwing. For this we may assume a cost of not less than $2, making a total of $5.45. These figures are based on what we consider standard construction for a 4-thread, 45-gage stocking. It is admitted that 4-45's can be and are made of much lower standard; that is, with raw silk as low as 78% and 3/5 turns per inch, and so loosely knit that the stocking will carry 2/3 oz. less silk; naturally the cost of such a stocking can be materially reduced.

A 7-thread, 42-gage stocking with cotton welt and foot can be produced for around 10c. per dozen less on piece prices. Such a

QUESTIONS AND ANSWERS

stocking might be made satisfactorily of 81% silk, and would carry around 10 oz. of silk and 10 oz. of cotton, the average count of the cotton being around 70/2. A 7-thread, 42-gage stocking with cotton welt and plated foot would cost a few cents more per dozen to produce than a straight cotton foot; the total quality of silk would be increased approximately 1 oz. per dozen and the mercerized cotton reduced around 3 oz. per dozen.

We might say that wages of hosiery employees (this is, piece rates) are now generally well known as prescribed by the National Hosiery Association Code. However, it must be taken into consideration that wages established in the hosiery code are minimum, and that the average is necessarily appreciably higher.

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Blanket Selvages Crinkle

Technical Editor:

We are inclosing a sample of blanketing which has a crinkly effect along the selvage. These crinkles appear after finishing; and we are of the opinion that they result from the fulling process. We have made several changes in our fulling formula, but have not been able to overcome the difficulty. We shall appreciate it, therefore, if you will advise us as to the cause of this effect and how it may be avoided. (8080)

The crinkles may be due to any one of several causes; and it will be necessary to do considerable experimenting in order to arrive at the source of the trouble by the process of elimination. The most probable causes are faulty fulling or napping. It is noted, however, that the selvage is rather loose or flabby; and it may be necessary to correct the construction of the selvage. You give no details as to your procedure; therefore certain of the following suggestions may be in accordance with your present practice and can be ignored.

Tack the selvages of the fabric loosely before fulling so that the goods will balloon during the fulling operation; this will help to prevent the cloth from running in the same fold. In sewing ends of pieces together (and this is very important in this case), do not hand sew but employ a chainstitch sewing machine, using 16/4 sewing thread. This sewing method should be used in all operations, especially in fulling and napping. If you have hand sewed this blanket at the napper, it may account for the crinkles, as a distinct hand-needle indentation is noted in the sample; also the crinkles are accentuated on the napper. Therefore see if there are any fulling-mill welts in the goods before napping. If not, and you are napping the goods wet, be sure that the pieces are not allowed to lie wet in folds and stretch in napping. Make certain that the pot eyes in both the fulling machine and washer are of the proper size for this class of goods.

Try scouring of the blankets before fulling, using a weak soap solution for

fulling; or if you prefer to full in the grease, it would be well to double up each piece in the mill to cut down the running time; also it would be advisable to lace out the piece from time to time; that is, to place a man on each side of the blanket and stretch it fillingways from end to end, taking out the turned selvage. Then proceed with the fulling operation in the regular manner.

Curled selvages that freeze are sometimes caused by the fulling solution being too heavy or too rich. While the selvage may turn under a weak solution, it will not freeze so as to cause a ridge, which, when napped, will produce a high napped rib along the selvage. We suggest that you use a low-titre soap for this work. Several of the solvents available today are helpful in keeping freezing at a minimum, for they not only cleanse, but keep the soap in a semi-fluid solution; the solvent should be added to the soap solution.

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Warp Streaks in Rayon Fabrics

Technical Editor:

We are enclosing a 2-yd. end of an all-rayon fabric of the following construction: 100-denier, 40-filament, dull for both warp and filling, 92 ends to the sley with 72 picks. You will note the very pronounced streaky effect in the warp, and we would be pleased if you would let us know if this is due to poor quality of rayon or if the silk has been subjected to harsh treatment either in the spooling or warping. (8096)

Examination of this fabric indicates that the warp streaks are due to several causes. A certain percentage of the streaks are caused by a faulty reed; that is, by lame dents. We find also that there is a slight variation in the size of the warp yarn, and this leads us to believe that the fabric was made from two lots of warp yarn. In addition, we are of the opinion that the tension in warping was uneven. We suggest that you examine your reed for lame dents, keep all lots of yarn separate, and make certain that the warping is carried out under a uniform tension.

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Cotton-Carding Speeds

Technical Editor:

Please give me your opinion as to whether it is advisable to slow down the doffer when carding very long-staple cotton. I know, of course, that it is often necessary to do this to obtain the proper cleaning, but I refer now to the question of obtaining the highest breaking strength in Pima and Sak cotton. If we were running the doffer, say, seven turns per minute on American cotton, would less speed be advisable on this staple cotton? (8068)

It is not advisable to decrease the doffer speed, but it is advisable to increase the licker-in speed, providing the licker-in speed is 450 r.p.m. or less. When the doffer speed is decreased, it slows down the feed-roll speed, with the result that less stock is fed to the licker-in. In other words, the action of the licker-in on the stock is increased. It must also be remembered that when the doffer speed is decreased the production is decreased and the waste is increased at the licker-in.

Within about a year two articles have been published in TEXTILE WORLD which give considerable information on the subject of doffer speeds, although they were written primarily on the subject of licker-in speeds. One of these, by Horace Spibey, appeared in the December, 1932, issue; and the other, by Charles A. Weston, appeared in the October, 1933, issue.

It is not the speed of the doffer that affects the fibers or yarn strength or the amount of cleaning done. It is the relation of the feet per minute of licker-in to the inches per minute of stock fed that governs the amount of damage, if any.

It is advisable to have the setting between the feed plate and licker-in such that the stock is not pulled through a small opening. Some carders still make this setting at 5/1,000 or 7/1,000; but these settings are too close, especially if a licker-in speed which is most efficient or is best in relation to the doffer speed is to be selected.

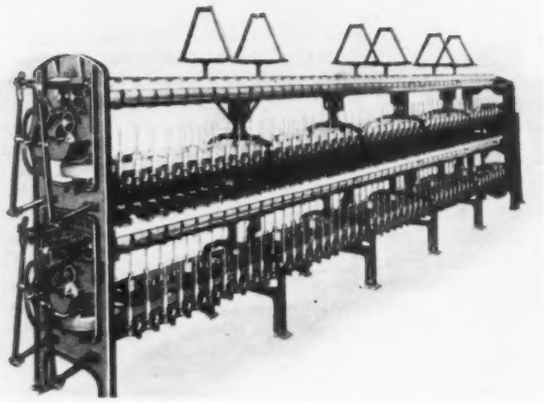
Providing the proper settings are employed, particularly with respect to the flats, which should not be set any closer than 10/1,000, and preferably no closer than 12/1,000, the yarn strength should not decrease with a slower doffer speed, but should increase. However, due to the fact that a reduction in doffer speed is a reduction in the production from the card, it is a more efficient carder who increases his licker-in speed to between 650 and 694 r.p.m. and leaves his doffer at the highest speed for efficiency and production based on a ratio of approximately 250 ft. of licker-in to each inch of stock fed.

Many mills have a large number of idle cards and many production gears on hand, and rather than buy licker-in pulleys in order to increase their licker-in speed, they prefer to start up more cards and decrease their doffer speeds when changing from a $\frac{7}{8}$-, 1-, or $1\frac{1}{16}$-in. to $1\frac{1}{8}$-in., $1\frac{1}{4}$-, $1\frac{1}{2}$-in., etc.

Therefore it is not a question as to whether it is advisable to slow down the doffer when carding very long-staple cotton. It is a question as to whether the licker-in speeds are high enough. There are of course other questions that each mill will have to answer, such as cost, production needed, etc.

With a decrease in doffer speed or an increase in licker-in speed, the licker-in droppings increase. In other words, the amount of cleaning is regulated by the ratio of licker-in surface speed to the inches fed by the feed roll.

NEW MACHINERY



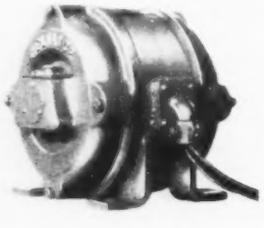
Silk and Rayon Twister

A new silk and rayon twister, known as the "Apex," to be demonstrated for the first time at the Philadelphia Knitting Show this month by Fletcher Works, Philadelphia, embodies several new features in addition to the "Oilwell" spindles, unit control, pressed-steel cork rolls, and adjustable spindle swings of previous models.

The bottom rows of spindles on the "Apex" machine extend farther out from the center than the top deck, affording greater operating convenience and visibility. The cork-roll shaft is arranged so that it can be removed vertically for replacement or repair of the rolls, without necessitating the sliding of the shaft through the end bearing, which is frequently difficult and sometimes impossible to accomplish on account of the large amount of floor space necessary. Another improvement is the "Oilwell" idlers, which, like the "Oilwell" spindles, hold a year's supply of oil which remains permanently clean.

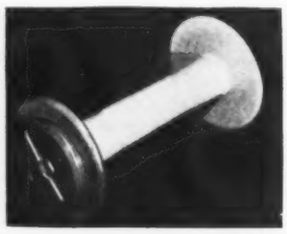
Loom Motors

A motor for loom service of an improved design, designated as Type AA, has been developed by Reliance Electric & Engineering Co., Cleveland, Ohio, with emphasis placed on strength, insulation, and lubrication. To provide a solid support, stator frames are of rolled steel and substantial feet are electrically welded to the frame. As an extra protection against heat caused by overloads when the loom is being broken-in, or when it may be out of adjustment, the windings, in addition to the usual slot-cell insulation, are given a double treatment with a heat-resisting oxide compound. Sleeve-type bearings are used and are interchangeable for right- or left-hand operation. Lubrication is supplied through wool yarn which fills a large capacity dust-tight reservoir. Rotors are of the cast type, the bars and end rings being cast of aluminum as a single unit. The exterior is designed to give an even contour and smooth finish to facilitate wiping and to avoid the collection of lint. Motors are available in ½, ¾, 1, 1½ and 2 hp.



Fiber-Head Spools

An improved type of construction for vulcanized fiber-head spools has been announced by Lestershire Spool & Mfg. Co., Johnson City, N. Y. Tests conducted by the manufacturer indicate that when the rail is in certain positions during the twisting operation, the yarn contacts the head of the spool; as a result any roughness leads to weak spots and consequently a lowered breaking strength for the yarn. The smooth surface of the vulcanized fiber-head spool, together with its balanced construction, is said to eliminate such weak places in the yarn and to increase the breaking strength. The new spools are available from the smallest worsted size to the large tire-fabric twister spools.



Loop Picker

A new loop picker has been developed by Denman Tire & Rubber Co., which features a symmetrically rounded loop and a shuttle impact face designed to give long life. Edges of the picker are rounded to avoid catching the filling and the shuttle-point hole is molded. Both long- and short-taper types are made, and each style can be had with either a large or small picker-stick hole. No rights and lefts are required.

Pick Counter

A new type of two-shift resettable Pickometer has been placed on the market by Waltham Watch Co., Waltham, Mass. Construction details featured by the manufacturer include a one-piece main driveshaft, steel parts cadmium plated as a protection against rust, resetting key which can be removed only when counter is in zero position.

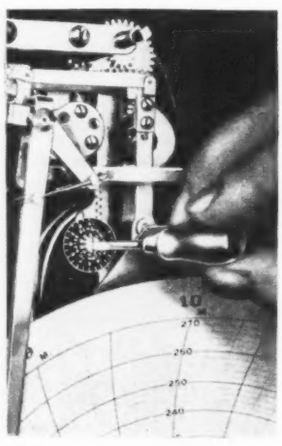
The standard universal-joint drive is designed to prevent thrust being transmitted to the counter-head and the rod is slotted. The driving worm is of finished cast iron and is enclosed in a die-cast housing with Alemite lubrication. The worm pinion is of hardened steel. The method of attaching the Pickometer to the loom is such that it cannot be tampered with without breaking a seal.

An optional feature is a non-resettable red wheel at the extreme right which reads in hundreds of picks, thus taking care of any accumulation of production not ordinarily shown on the counter dial. The red wheel can be shielded by the cover, unshielded or omitted entirely, according to desires of the purchaser.

Recording Regulators

To provide flexibility in either throttling or on-and-off control where the time-lag in the apparatus under control makes the problem difficult, Taylor Instrument Cos., Rochester, N. Y., have incorporated a Universal Sensitivity Adjuster in all "Fulscope" regulators. A full-range sliding adjustment is provided by means of which regulator performance can be balanced for any degree of apparatus time-lag; a screwdriver adjustment on a graduated dial giving throttling or on-and-off control, whichever is desired, without interruption of service. The regulator mechanism and means of adjustment are the same for all "Fulscope" regulators whether for controlling temperature, pressure, rate-of-flow or liquid level. Adaptations for various applications are readily made. The mechanism is of duralumin and anti-friction bearings are used.

Control is maintained in the usual manner by regulating the flow of air pressure to the diaphragm valve in the controlling-medium line in response to changes in the apparatus under control. A compensating device takes care of any occasional variation in the recommended air pressure of 25 lb.



Automatic Bunch Builder

A positive-action, fully automatic bunch builder for spinning frames have been developed by Whitin Machine Works, Whitinsville, Mass. The unit is complete and flexible and the length and width of the bunch may be varied without changing cams. From 3 to 15 yd. may be wound on the bobbin and the width varied from ¼ in. to ¾ in. by making adjustments. Another point featured by the manufacturer is that positive control of the amount of yarn wound on the bobbin eliminates waste.

In operation, a gear secured to the camshaft imparts rotation to a disk gear composed of three elements cast integral; that is, two disk gears with a small pinion between them. The pinion meshes with the rack teeth, causing the swing arm to move along the eccentric arc of the rack, imparting the desired slow and short traverse to the builder arm. When the pinion passes out of mesh with the rack teeth, the bunch has been completed and the regular builder-motion comes into play.

The rack is provided with five tapped holes to receive a stop screw, and the yardage is determined by the position of the stop screw. Width of the bunch is varied by two set screws in conjunction with the rack. This adjustment increases or decreases the eccentricity of the tooth-arc of the rack with the center point of the cam, the builder motion being controlled by the degree of eccentricity at this point.

Densimeter for Wound Yarn

A device, known as the Densimeter, for measuring the density of yarn wound on bobbins, quills, cops, or cones has been developed by Sipp-Eastwood Corp., Paterson, N. J. Some time ago the company brought out the Tensometer, a device for checking tension, and the present instrument is to give further control. For a given yarn, the correct density which will prevent "sloughing-off" is determined, and the density of the package measured by the Densimeter. The Tensometer is then used to adjust tensions so that the desired density is obtained. In use, the package to be tested is held in one hand and the saddle of the Densimeter pressed against it. Projecting ⅛ in. from the saddle is a plunger ¼ in. thick. The amount which the plunger presses into the surface of the package before the saddle contacts the surface indicates the density, which is registered on a dial.

Ball-Bearing Remote Control for Liquid Level

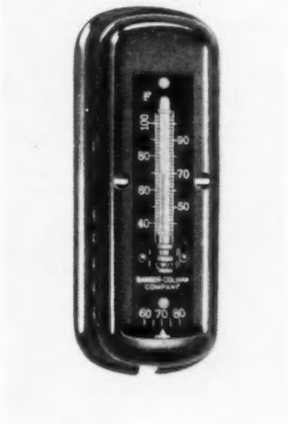
A new liquid-level control, in which the float chamber is equipped with full ball-bearing construction of stainless steel

balls and races, has been announced by Swartwout Co., 18511 Euclid Ave., Cleveland, Ohio. The design is intended to eliminate friction caused by liquid under pressure. The control will operate valves at a distance up to 300 ft. and at pressures up to 450 lb. per sq.in. The operating mechanism is fully inclosed, with a grease-sealed stuffing box optional.

Temperature and Humidity Controls

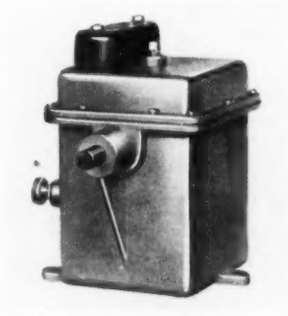
A new venture for a company already known for its textile devices, is the introduction by Barber-Colman Co., Rockfort, Ill., of a line of electrically-operated temperature- and humidity-control equipment. Sales and installations of this equipment, which has been designed with textile requirements particularly in mind, will be handled by the Framingham, Mass., branch of the company.

A variety of thermostats, hygrostats, motor-operated valves, damper controllers, and accessories are available, designed to supply a complete system for the control of any heating, ventilating, or air conditioning installation. One of the features stressed is that the various units are electrically operated and, as they are connected only by small, low-voltage wiring, installation in existing buildings is made easy. As a typical use, the company points out that heating coils are usually supplied by a single main on each floor and that to control the temperature it is only necessary to place a motor-operated valve on the main and a thermostat in the middle of the room. Uniform humidity can be maintained by a similar control on the water supply leading to the humidifiers.



Wall thermostat

Motor operated valve



Motor operated damper control

Plunger-Type Relay

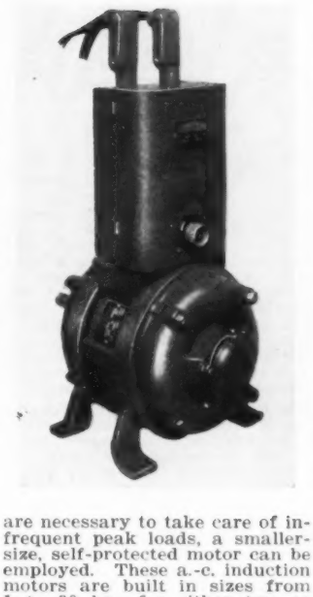
Instantaneous and time-delay plunger-type relays for protection againt overcurrent and undervoltage, for use as auxiliary relays, have been announced by the General Electric Co., Schenectady, N. Y. The principle of operation depends upon the action of a magnet coil in attracting or relcasing a plunger when predetermined values of voltage or current are present in the coil circuit. The instantaneous overcurrent relay can be changed from time delay on contact opening, contact closing, or both, simply by placing a poppet in the proper hole. Likewise, by the turning of a cap, the air intake or outtake to the bellows can be regulated to change the time delay in the opening or closing of the contacts. Other features include the changing of hand-reset to self-reset contacts, and from circuit-opening contacts to circuit-closing contacts.

Wood Preservative

A concentrated creosote oil for the protection of wood against decay and termites is being marketed by Tennessee Eastman Corp., Kingsport, Tenn., under the trade name NO-D-K. Advantages claimed for the new product are: it may be easily applied either by painting, spraying or dipping (two coats with an interval of two or three days between applications are recommended); it will not burn the skin of workmen; will not crack or peel off; the boiling point is sufficiently high so that it is not driven off by the heat of the sun; it is insoluble in water and hence not readily leeched out by the action of rain; it gives the woodwork an attractive brown finish.

Self-Protected Motor

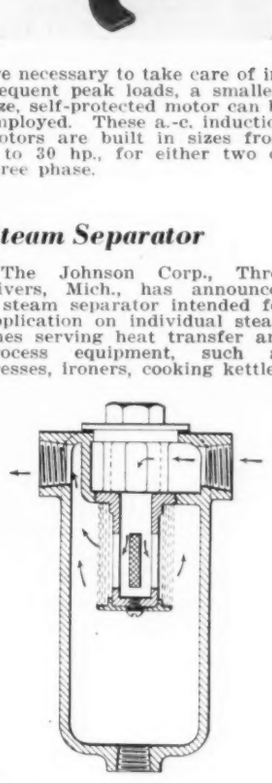
A self-protected motor, designed so that it will not burn out, is announced by Lincoln Electric Co., Cleveland, Ohio. A protective device is built into the windings and if the motor is stalled through overloading, or if it runs excessively hot or single phase, the protector shuts off the current. Advantages cited by the manufacturer are that less supervision is necessary, repair bills are cut, and, frequently, where large motors



are necessary to take care of infrequent peak loads, a smaller-size, self-protected motor can be employed. These a.-c. induction motors are built in sizes from ½ to 30 hp., for either two or three phase.

Steam Separator

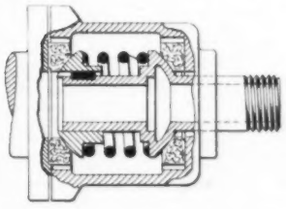
The Johnson Corp., Three Rivers, Mich., has announced a steam separator intended for application on individual steam lines serving heat transfer and process equipment, such as presses, ironers, cooking kettles,



heaters, dryers, etc. This device embodies a modification of the Gast principle of zigzagging the moisture-laden vapor through several layers of coarse-mesh screen. The large effective area of the screen, plus the space between ports and screen, permits the separator to function also as a strainer for long periods without cleaning. The threaded interior casting of the small sizes and the flanged body of the larger sizes assures ready removal of the screen for cleaning. This type separator, made in sizes from ¼ to 2 in., is claimed to effect a 99% plus elimination of excess saturation and condensate in the steam when applied immediately adjacent to the point of entry.

Rotary Pressure Joint

The Johnson Corp., Three Rivers, Mich., has announced a rotary pressure joint for steam, gases, and water and other liquids, using special carbon graphite seal rings for which lubrication is not required. The pressure equalizing within the joint seals the highly polished concave surfaces of the carbon graphite seal rings against chromium cast-iron spherical flanges. The joint is provided with a light spring which holds the parts in place. The makers state that the lat-



eral movement possible in addition to the angular movement allows for unusual flexibility to compensate for piping or bearing irregularities. The joint is said to operate satisfactorily on steam pressures exceeding 200 lb. and at speeds of 200 r.p.m. It is available in sizes from ¾ to 3 in.

Pipe Cutting Machine

Introduction of a pipe-cutting and beveling machine, readily portable, and adaptable for almost any hand-cutting blowpipe, has been announced by The Linde Air Products Co., New York. This machine consists of a center rod with three spreading arms which press against the inner walls of the pipe, holding it in position, with an arm supporting the blowpipe which can be adjusted to the desired angle of cut. The operator, after centering the device in the pipe, merely turns the crank causing the blowpipe to rotate evenly around the pipe.

Combined Gage and Control

For control at a definite control point, The Foxboro Co., Foxboro, Mass., has announced pressure and temperature controllers in which the dial and knob on the lower face of the instrument permit adjustment of the temperature or pressure within the range of the controller. The indicating gage above the adjusting knob shows the air pressure on the diaphragm motor of the control valve and also shows whether the valve is opening or closing. On the temperature controller, a 2-in. dial-type thermometer may be installed in place of the air gage, while the pressure controller may be equipped likewise with a high-pressure indicating gage that shows the pressure being controlled. All working parts are integral with or mounted on a cast-aluminum base.

NEW PUBLICATIONS

Woolen and Worsted Raw Materials, by John R. Hind; Ernest Benn, Ltd., London, Eng.; 8/6 net.

So extensive is the variety of fibers employed by the wool industry and so great are the differences in their characteristics and conditions as received by the mills that an up-to-date reference book of this character will doubtlessly be welcomed by woolen and worsted men. Among the many subjects covered are wool-growing countries, sheep pests and diseases, branding, wool terms, grading and classing, skin wools, wool purchasing, fiber properties, sorting, tops, wastes, scouring, and carbonizing. Individual chapters are devoted to British, European, Australian, African, American, and Asiatic wools; and an additional chapter discusses mohair, alpaca, llama, cashmere, camel hair, and other hairs.

The Marketing of Cotton; by John A. Todd, M.A., B.L.; Sir Isaac Pitman & Sons, Ltd., London, and Pitman Publishing Corp., New York; $3.00.

The author is well known for his previous works on cotton and its distribution. In this work he offers a description of the whole marketing process of cotton from grower through exporter, focusing principally on the Liverpool cotton market. However the content also covers not only the American market but those of India, Egypt and the smaller cotton-growing countries. Mr. Todd, who has contributed articles on cotton distribution to TEXTILE WORLD, describes his book as "an account of what is perhaps the most highly organized market for any staple commodity in the world and particularly of the futures system, for the cotton trade can probably claim that it invented that system though the claim may be disputed by the wheat trade."

Practicability of Maximum Standards of Work Under Stretch-Out, by Ethel L. Best; Superintendent of Documents, Washington, D. C.; 5c.

The burden of this "memorandum" issued by the Women's Bureau of U. S. Department of Labor is to the effect that the work, layout, machinery, and divisions of jobs differ so greatly among cotton mills that a code setting maximum spindles and looms per operator must contain many different standards for different and clearly specified conditions. Miss Best lists the factors to be considered and the steps to be taken if standardization is attempted.

Psychrometric Charts; by Donald B. Brooks; Superintendent of Documents, Washington, D. C.; 5c.

Charts developed at Bureau of Standards increase precision and reduce time in evaluating relative humidity from dry- and wet-bulb observations and determining the pressure of water vapor.

Tests of Theatre-Proscenium Curtains; Bureau of Standards Research Paper RP603; by Nolan D. Mitchell; Superintendent of Documents, Washington, D. C.; 5c.

A comparison of various asbestos-cloth curtains and steel curtains by fire tests.

Welding Handbook, Revised Edition; Lincoln Electric Co., Cleveland, Ohio. Price $1.50.

This book is designed especially for the use of designers, engineers, welding operators, welding foremen, and for engineers responsible for the design of products which may be redesigned for welding construction. The eight sections of the book cover the following subjects: (1) welding methods and equipment; (2) technic of welding; (3) welding procedure, speeds and costs; (4) structures and properties of weld metal; (5) weldability of metals; (6) designing for arc-welded steel construction of machinery; (7) design for arc-welded fabrication of steel structures; and (8) typical applications of arc-welding in manufacturing, construction, and maintenance.

A.S.T.M. Book of Standards, 1933, Part II; American Society for Testing Materials, Philadelphia.

This volume contains 283 standards and tentative standards of the Society in effect as of October, 1933. Included are specifications, tolerances and test methods for sixteen specific types of textiles, a specification for textile testing machines, and a standard general method of testing woven textile fabrics.

Textile Design, A Bibliography and Directory; The Textile Foundation, Washington, D. C.

This pamphlet lists over 300 books devoted either in whole or in part, to fabric design from its artistic side. In addition it gives the names and locations of about 30 museums and other institutions in which textiles are exhibited.

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Business Literature

Roller Chains. The Whitney Mfg. Co., Hartford, Conn. Catalog of roller chains and sprockets with information for engineers, production and maintenance men.

Flexible Couplings. Poole Foundry & Machine Co., Baltimore, Md. Catalog describing the design, manufacture and application of flexible couplings and giving engineering data.

Chemicals. E. I. du Pont de Nemours & Co., Inc., R. & H. Chemicals Dept., Wilmington, Del. Quarterly price list of chemicals for all industries.

Weaving Equipment. R. I. Warp Stop Equipment Co., Pawtucket, R. I. Folder discussing the advantages of the K-A electrical warp stop for all types of looms.

Centrifugal Pumps. The La-Bour Co., Inc., Elkhart, Ind. Handbook of performance and test standards for self-priming centrifugal pumps, including engineering data.

Dyestuffs. General Dyestuff Corp., New York. Sample card showing available range of colors obtained with "Palatine" fast dyestuffs in straight dyeings and also in several combination shades.

Valves. Homestead Valve Mfg. Co., Coraopolis, Pa. Illustrated catalog of quarter turn valves for various applications.

Pumps. The Duriron Co., Inc., Dayton, Ohio. Circular on centrifugal pumps for handling corrosive chemicals.

Condensate Removal Device. The Coe Mfg. Co., Painesville, Ohio. Illustrated pamphlet showing the Drainator, a device for removing steam condensate for kettles, presses, heating and processing machinery.

Preheater. The Air Preheater Corp., New York. Bulletin illustrating various applications of the Ljungström continuous regenerative counterflow air preheater.

Valve. American Car & Foundry Co., New York. Pamphlet describing improved lubricated plug valve.

Motor Drives. The Rockwood Mfg. Co., Indianapolis, Ind. Illustrated folders showing motor drive bases for various types of installations, including small motors, vertical drive and ceiling drive.

Screws. The Allen Mfg. Co., Hartford, Conn. Bulletin containing engineering data showing the holding power and the proper sizes of hollow set screws and socket head cap screws to use under different conditions.

Ammonia Compressor Units. The Carbondale Machine Co., Carbondale, Pa. Bulletin describing combined units with duplex vertical ammonia compressors.

Warping Equipment. Cocker Machine & Foundry Co., Gastonia, N. C. Illustrated circular showing high speed and slow speed warpers and creels for handling synthetic yarns.

Warp Sizing Equipment. Cocker Machine & Foundry Co., Gastonia, N. C. Bulletin illustrating warp sizing machines for handling synthetic yarns on silk and cotton systems.

Bunch Builder. Whitin Machine Works, Whitinsville, Mass. Illustrated pamphlet describing the new bunch builder for spinning frames.

Twisting Machinery. Whitin Machine Works, Whitinsville, Mass. Illustrated booklet describing the construction and operation of the various types of twisting frames, for wet and dry twisting of cotton yarn, manufactured by the company.

Knitting Machinery. Textile Machine Works, Reading, Pa. February issue of Reading Record containing article on the causes and remedies for sinker and needle lines in full-fashioned hosiery.

BUSINESS NEWS

Saco-Lowell Shops, Boston, Mass., reports net profit of $227,807 for 1933, equal, after $6 per share for the first preferred dividend, to $5.75 per share on the second preferred. The company reported a loss of $761,002 the previous year.

Draper Corp., Hopedale, Mass., according to its balance sheet as of Dec. 31, 1933, shows indicated earnings of $1,245,904 during the year, equal to $3.57 per share. Indicated earnings for 1932 were $866,974.

W. S. Lee Engineering Corp., Charlotte, N. C., has elected W. S. Lee, Jr., president to succeed his father who died recently, A. C. Lee and L. W. Wallace were elected vice-presidents.

W. B. Dunn Co., brokers in textile mill properties and dealers in woolen and worsted machinery, have moved to larger quarters at 536 Kinsley Ave., Providence, R. I., after a 23-year location at 49 Westminster St.

Eclipse Textile Devices Co., Elmira, N. Y., has added E. E. Brannon, formerly with the Edna Mills Corp., Reidsville, N. C., as sales representative in the southern territory. J. D. Lutes is southern sales manager with office at Charlotte, N. C.

Onyx Oil & Chemical Co. recently opened a Canadian branch at St. Johns, Que., where a line of textile processing and finishing compounds will be handled. Albert R. Jenney has been appointed general sales manager, with headquarters in the Dominion Sq. Bldg., Montreal.

Railway Express Agency has announced that arrangements have been made with **Western Union** whereby express packages will be accepted at selected local telegraph offices, or will be picked up by messengers when desired.

Robert Gair Co., Inc., manufacturers of paperboard and paperboard products, has announced that the six plants now operating as divisions of the company (names given in parentheses below) have been incorporated as wholly-owned subsidiaries under the following names: Gair Cartons, Inc. (Piedmont); Gair Thames Containers, Inc. (Thames River); Gair Shelton Containers, Inc. (Connecticut Container); Gair Boston Containers, Inc. (Warner & Childs); Haverhill Boxboards, Inc. (Haverhill); Tonawanda Boxboards, Inc. (Tonawanda).

H. D. James, control expert and long a consulting engineer of the Westinghouse Electric & Mfg. Co., has opened an engineering consulting service specializing in industrial and building problems. Experienced engineers working under Mr. James are available for special assignments. Headquarters are located in the Gulf Bldg., Pittsburgh.

Ford, Bacon & Davis, New York, consulting and managing engineers, are celebrating their 40th year in business.

United States Testing Co., Inc., Hoboken, N. J., has started a new service whereby several technicians will be available to discuss personally with clients methods of procedure, etc.

Union Special Machine Co., Chicago, has appointed Charles E. Stevens as manager of its Boston office with which he has been associated since 1906.

Bertram Durell has bought the **Brierly-Lombard Co.,** mill supplies, Worcester, Mass. He will operate the business, which was founded in 1847, under its present name.

Solvay Sales Corp. will remove its Philadelphia office to 12 South 12th Street on May 1.

Barclay Chemical Co., Inc., New York, has moved its offices and warehouse to larger quarters in the Holland Plaza Bldg., 75 Varick St.

Hatch & Reutlinger, consulting textile specialists, have moved to larger quarters in the same building at 366 Fifth Ave., New York, and are now located in room 1008.

Tidewater Supply Co., Norfolk, Va., has leased the building at 95 Roberts Street, Asheville, N. C., and will establish a branch there in charge of Sullivan Booe.

Elgin Softener Corp., Elgin, Ohio, manufacturer of water-conditioning equipment, announces the appointment of the L. A. Snider Engineering Service, Chicago, as representatives in the northern Illinois and Indiana territories.

Worthington Pump & Machinery Corp., Harrison, N. J., has added A. G. Pratt to its board of directors. Mr. Pratt is president of the Babcock and Wilcox Co.

Westinghouse Lamp Co. has elected D. S. Youngholm a vice-president of the company.

Allis-Chalmers Mfg. Co. announces the removal of its Buffalo district office to the Liberty Bank Bldg. A. D. Brown continues as district manager.

Superheater Co., New York, announces that certain of their agents for stationary superheaters, economizers, furnace water walls and other Elesco steam plant equipment who have now been appointed sales agents for Ljungström air preheaters, include the following: Walter Castanedo, Inc., New Orleans, La.; J. W. Eshelman, Birmingham, Ala.; J. S. Cothran, Charlotte, N. C.; Rees V. Downs, Memphis, Tenn.; Haylett O'Neill, Houston, Texas.

Textile World Analyst

IMPROVEMENT FOLLOWS MONTH OF UNCERTAINTY

Textile Activity Above Last Year: Textile mill activity for the first two months of 1934 was approximately 8% above that for the first two months of last year. This is based on consumption of textile fibers; complete March statistics are not available at this writing. The two-month total was about 10% below that of the similar period for the eight-year average 1924-1931, roughly assumed as normal. February itself registered the largest consumption for that month since 1930.

TEXTILE markets shared with business generally the uncertainty which characterized most of the month of March. At the end of the month and in the earlier days of April, a greater degree of confidence seemed to have been restored.

The main factors contributing to the feeling of pessimism were the possibility of the imposition of a blanket reduction of hours upon industry; the threat of a broad labor disturbance; and the fear of the effects of pending legislation. The bearish potentialities of each of these factors were decreased by actual happenings, although none of the three has actually been removed.

The disquieting effect of the proposal to reduce hours and increase wages was allayed somewhat by the action of NRA in passing back to industry itself the consideration of this problem. When nothing tangible developed from the committees representing capital goods, consumer goods, and service and retail fields, these groups were pushed for actual data showing re-employment possibilities. In this way, the burden of proof was placed upon industry itself, but at any rate the threat of blanket action, irrespective of individual conditions, seemed to have been averted for the time being.

The labor cloud was partly dispelled by the settlement of the trouble in the automobile industry. While even optimists do not feel that a permanent solution of the many problems of industrial relations has been reached, at least the immediate menace to the recovery movement was removed.

The impairment of confidence attributed to certain bills pending before Congress was lessened by apparently inspired statements from Washington indicating a recognition of the unsettling effects of some of this legislation, and a willingness to modify those features which had been most feared.

Irrespective of individual opinions on these highly controversial subjects, the net result of the developments mentioned above has been improvement in the general outlook.

All of this discussion refers to business generally rather than to textiles specifically. The two cannot be dissociated at this particular time. For the future, evidence indicates continued improvement at least during this second quarter of the year. Some economists anticipate more than seasonal recession in the summer, with a resumption of the upward trend in the last quarter of the year.

Optimistic statements by certain leading industrialists of the country have met with varying reactions. Description of the recovery movement as now "irresistible" was considered particularly significant. Some observers were unkind enough to recall the periodic issuance of hopeful prophecies during most of the decline, and the consistent failure of those predictions. Nevertheless, at the risk of making a general statement difficult to substantiate, this writer believes that the evidence on which these latest expressions have been based, is too strong to be dismissed so lightly.

Earlier this year, we predicted more profitable operations for textile mills in 1934 than in 1933. It should be emphasized that this reference was to *operating* profits. A very timely warning in this connection has been issued by an economist for whose opinion we have a considerable respect. He says: "Industry is in a process of transition from inventory profits to profits derived from straight operating margins. In projecting ahead on an annual rate the earning power of various corporations, due allowance should be made for this extremely important factor. If current monthly earnings are projected ahead to give an annual rate, such projections will, in a great many cases, probably prove to be too high."

TABLE I. CARDED FABRIC MARGIN

Date	Margin in cents	Date	Margin in cents
July, 1931.....	15.3	May, 1933.....	15.6
October, 1931..	13.3	June, 1933.....	20.6
January, 1932..	12.1	July, 1933.....	23.4
June, 1932.....	9.5	August, 1933...	21.4
July, 1932.....	9.1	September, 1933	19.5
August, 1932..	11.1	October, 1933...	19.1
September, 1932	13.0	November, 1933	17.7
October, 1932..	12.6	December, 1933	17.6
November, 1932	10.7	January, 1934..	18.4
December, 1932	10.6	February, 1934	19.1
January, 1933..	10.4	March, 1934...	18.3
February, 1933.	10.1	Mar. 7.....	18.9
March, 1933...	10.2	Mar. 14.....	18.3
April, 1933.....	11.4	Mar. 21.....	17.9
		Mar. 28.....	17.9

TABLE II. CARDED YARN MARGIN

Date	Margin in cents	Date	Margin in cents
July, 1931.....	12.6	May, 1933.....	12.3
October, 1931..	12.7	June, 1933.....	15.4
January, 1932..	10.9	July, 1933.....	23.2
June, 1932.....	9.9	August, 1933...	23.5
July, 1932.....	9.6	September, 1933	21.3
August, 1932...	9.7	October, 1933...	20.0
September, 1932	12.8	November, 1933	18.4
October, 1932..	12.3	December, 1933	18.5
November, 1932	11.3	January, 1934..	18.3
December, 1932	10.9	February, 1934.	16.5
January, 1933..	10.2	March, 1934...	16.8
February, 1933.	9.4	Mar. 7.....	16.9
March, 1933....	9.8	Mar. 14	17.2
April, 1933.....	10.1	Mar. 21.....	16.6
		Mar. 28.....	16.3

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Textile World's Price Index Numbers

Date	Cotton Index Numbers: Cotton	Yarns	Gray	Colored	Wool Index Numbers: Wool	Tops	Yarns	Cloth	Silk Index: Raw Silk
July 31, 1914..	100	100	100	100	100	100	100	100	100
1925.....	187	188	189	176	223	229	224	233	143
1926.....	140	155	157	149	184	189	179	207	136
1927.....	140	153	159	153	181	184	187	195	119
1928.....	160	162	162	166	199	202	199	197	110
1929.....	153	144	145	167	176	179	192	211	108
1930.....	108	125	123	144	127	139	161	202	179
1931.....	68	93	92	119	99	112	134	161	54
1932.....	51	76	73	100	78	97	115	128	34
1933.....	84	116	110	113	116	135	139	181	35
Jan. 1934.....	124	151	139	144	153	180	181	222	32
Feb. 1934	132	148	146	144	153	180	181	222	34
Mar. 1934.....	132	149	145	142	152	178	180	209	31

Note: All cotton indices since Aug. 1 include processing tax.

TEXTILE WORLD'S

Cotton Digest

THE continued increase in popularity of cotton fabrics has not been an accident. It has been the result of careful planning and hard work—both in the creation of attractive materials, and in their promotion.

Doubters are referred to the plans of the Cotton Textile Institute for the fourth annual observance of National Cotton Week, May 14-19. The series of six mailings of store-selling helps represents a complete and timely service. In this and in countless other ways, the Institute is insuring, instead of merely hoping for, the success of Cotton Week. Its efforts deserve the unqualified support and cooperation of every individual cotton manufacturer.

—*Editor.*

$100,000,000 Potential Equipment Purchases

Potential outlay of $100,000,000 for capital goods equipment by the cotton textile industry during the next 18 months is indicated in a survey just completed by the Cotton Textile Code Authority. The expenditure is conditioned on assurances to industry of the same constructive cooperation from the legislative branch of the Government as has characterized its relations with the NRA, states George Sloan, chairman of the Code Authority, and of the Consumers' Goods Industries committee, to whom the report was made.

Some 500 mills representing 15,000,000 spindles, or one-half of the industry—mills both large and small and located throughout the textile producing States in New England and the South—were covered by the survey. Of the total potential expenditure, nearly $14,000,000 represents commitments already entered into for replacement machinery; and of the balance, 60% would be spent for manufacturing equipment; 25% for manufacturing plant construction and other construction including houses, power buildings, warehouses, transmission lines, etc.; and the remainder for auxiliary machinery such as power generators, elevators, trucks, tractors and repair or replacement projects not included above.

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A.C.M.A. to Meet at Charleston, S. C.

The 38th annual convention of the American Cotton Manufacturers Association will be held April 18, 19, and 20 at the Francis Marion Hotel, Charleston, S. C. The Board of Government will hold its pre-convention meeting in the private dining room of the Francis Marion Hotel at 7:30 p.m., Wednesday, April 18, while the convention proper will open in the convention hall of the same hotel at 10 a.m., Thursday, April 19. The regular banquet will be held Thursday evening, April 19, at 8 p.m., after which there will be dancing in the ball room. The business session will take place the following morning, April 20.

George A. Sloan, president of the Cotton-Textile Institute and chairman of the Textile Code Authority, will make the principal address of the meeting. Other speakers will be Dr. B. E. Geer, president of Furman University, Greenville, S. C., and Dr. Robert Bruere, chairman of the Cotton Textile National Industrial Relations board, both of whom will discuss the phase of code relationship as directed through the board. T. M. Marchant, president of the A.C.M.A., will make an address which is anticipated with much interest, as he has occupied the office of president during a most trying period.

As there are no afternoon sessions more time is allowed to committee meetings, golf and recreation. It is pointed out that the famous flower gardens are expected to be in full bloom at this time.

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Ten Years of Cotton Textiles

The third annual ten-year survey of the Association of Cotton Textile Merchants of New York, which has come to be such a valuable contribution to current information on the industry, has been released. This begins with 1924 and includes comparable data for 1933. Among the important trends pointed out by W. Ray Bell, secretary, in the report are the following:

The first year of recovery was founded upon a substantial improvement in domestic demand, resulting in 23.3% increase in total spindle hour activity in 1933 over 1932.

Improved balance between production capacity and consumption demand added between 2,000,000 and 3,000,000 spindles to equipment actively engaged in supplying the country's needs.

Domestic requirements for 1933, estimated at 7,687,000 sq.yd., compare favorably with average of 7,554,000 for eight years prior to 1930.

Per capita consumption rose in 1933 to 61.16 sq.yd., almost identical with weighted average of 61.20 sq.yd. for 12-year period 1922-1933, inclusive.

Reduction of over a half million spindles of installed equipment during 1933 does not reveal full measure of dismantling, as August report gave smallest figure for spindles in place since 1911. Loss for first eight months of 1933 had reached total of 660,372 spindles. Since then slight increases each month have totaled 156,538 by the end of December.

Largely for replacements and additions, installation of new machinery attained the highest figure but one for any of the previous eight years. The 1933 figure was 348,568 spindles; the only higher year during the period referred to was 1927 with 496,192 spindles. Considering that the average of new machinery installed during the nine years of record is less than 1% of the currently effective equipment, obsolescence must still be reckoned a potential factor in the future costs of the industry's development. A forecast of even larger substitution of modern machinery is therefore reasonable for 1934.

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Senate Amends Bankhead Bill

An advalorem tax of 75% on all cotton ginned in excess of 10,000,000 bales is provided in one of the numerous amendments which hedge the Bankhead bill, recently approved by the Senate. The bill, upon leaving the house, called for a tax of 50% of the average central market price, to be levied at time of sale. Although 95% of the cotton farmers favor compulsory crop reduction, much opposition is being voiced by other groups. The Senate vote for passage was 46 to 39 with several members declaring that they voted for the measure with misgivings, despite approval given by the President. The principal changes in the house bill are:

Limiting the life of the bill to one year.

Making the period on which the allotments are to be based ten years instead of five, ending Jan. 1, 1934.

Providing that any person raising only six bales be exempt from the tax. (Eliminated in conference.)

Levying the tax at the gin and raising the ad valorem tax to 75%.

Making violations of the act punishable with a $100 fine and no imprisonment.

Approximate State quotas in bales are: Texas, 3,123,000; Mississippi, 1,063,000; Arkansas, 926,000; Alabama, 856,000; Georgia, 847,000; Oklahoma, 756,000; South Carolina, 584,000; North Carolina, 513,000; Louisiana, 508,000; Tennessee, 327,000; California, 136,000; Missouri, 152,000; Arizona, 87,000; New Mexico, 61,000; Virginia, 30,000; Florida, 24,000; Kentucky, 5,900; Illinois, 700; Kansas, 400.

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Eastern Carolina S.T.A. To Meet April 26

Eastern Carolina Division, S.T.A., will meet at N. C. State College Textile School, Raleigh, N. C., on April 26, at 10 a.m. The subject of the meeting, "Machinery Inspection and Overhauling" will cover carding, spinning and weaving. The meeting will be held on the same day and at the same place as the annual Textile Institute and Style show of the textile school.

R. D. Howerton Elected

Annual meeting and dinner of Carolina Yarn Assn. was held March 12 at the O'Henry Hotel, Greensboro, N. C. R. D. Howerton was elected president, R. J. Mebane, vice-president; J. R. Morton, treasurer; W. T. Dodge, secretary. The annual golf tournament will be held next fall, date and place to be announced later.

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H. A. Florsheim in New Location

H. A. Florsheim & Co., direct sales agents for cotton yarns, removed their offices early in March to larger quarters at 350 Madison Ave., New York. The firm has lately opened a New England office at 5 Central Street, Methuen, Mass., in charge of W. Maxwell Hastings, Jr. The firm sells the yarn product of Hall-Kale Mfg. Co., Bowling Green Spinning Co., Talladega Cotton Factory and others.

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February Cotton Statistics

Statistics of particular interest to cotton manufacturers, showing February operations and the raw material situation were:

Spindle Activity	101.5% capacity, or 6,692,120,318 spindle hours
Cotton consumed	477,890 bales
Cotton imported for consumption	13,575 bales
Cotton exported (excluding linters)	628,457 bales
Cotton ginned (Mar. 20 report)	13,043,110 bales

January figures for comparison:

Spindle Activity	98.5% capacity, or 6,970,394,758 spindle hours
Cotton consumed	508,034 bales
Cotton imported for consumption	12,698 bales
Cotton exported (excluding linters)	739,352 bales
Cotton ginned (Jan. 23 report)	12,558,762 bales

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Cotton Financial Notes

Consolidated Textile Corp. reports net loss for 1933 of $229,227 compared with loss of $1,233,639 in 1932 and loss of $3,282,862 in 1931. Sales at $7,347,379 were 60% over 1932. Percentage of selling and administrative expense to sales dropped from 9% to 6%. The Pelham (Ga.) mill and the Henderson (Ky.) mill are still closed down and efforts are being made to sell them.

Southeastern Cottons, Inc., organized Feb. 1, 1933, had an unfilled order position of $9,800,000 on Feb. 1, 1934. Orders billed in first year of business amounted to $46,800,000.

Pacific Mills, Boston, reports net profit, after charging off $797,413 for liquidation of the Lawrence cotton cloth unit and other charges, of $1,005,208 for the year ended Dec. 31, 1933, equal to $2.53 per share of common. This compares with net loss of $3,044,952 for 1932.

Amoskeag Mfg. Co. reports net profit for 1933 of $31,444, comparing with a loss of $1,210,227 for 1932. Annual meeting will be held April 18.

Kendall Co. reports net profit for 1933 of $955,864 compared with $60,518 in 1932. Sales for 1933 were up 18%.

Farr Alpaca Co., Holyoke, Mass., reports net loss of $110,462 for the six months ended Dec. 2, 1933. The corresponding loss the year before was $510,383.

Arcadia Mills, Spartanburg, S. C., has been relieved of receivership set by lower courts, in a decision of the South Carolina Supreme Court on March 21.

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Cotton Mill News

Lowe Mill and **Helen Mill,** West Huntsville, Ala., idle several years, may be put into operation under leases to the Federal Government, according to C. J. Cargile, director of CWA work in Huntsville.

Avondale Cotton Mills, Stevenson, Ala., are installing new machinery. The mill buildings are being repainted inside and out.

Lawton Mills Corp., Plainfield, Conn., has ordered 432 Draper cotton looms, which will replace outmoded equipment.

Highland Mills, Griffin, Ga., is erecting a one, two and three-story addition, 105x240 ft., for which general contract was recently let to the Batson-Cook Co., Inc., West Point, Ga. A new one-story machine shop, 40x60 ft., will also be built. Entire project will cost close to $90,000, with equipment. Robert & Co., Inc., Atlanta, Ga., are the architects and engineers. About 400 looms are to be transferred from New England.

Walton Cotton Mill Co., Monroe, Ga., has awarded contract for construction of cloth storage building to A. K. Adams Co., Atlanta. The structure will be two stories, 80x90 ft., Warfield & Keeble, Nashville, are architects.

Aileen Mill, Biscoe, N. C., was sold for $150,000 (March 17) at a receiver's sale. The purchaser was D. W. Brooks, trustee, of Newburger Cotton Co., Memphis, Tenn.

Roseboro Cotton Mills, Clinton, N. C., resumed operation March 1, having been leased by **Chesterfield Yarn Co.**

Borden Mfg. Co., Goldsboro, N. C., plants Nos. 1 and 2, is installing single-process picking. Each of the plants has completed the installation of two high-speed Foster winders.

Proximity Mfg. Co., Greensboro, N. C., has begun superstructure for a new two-story addition to its White Oak Mills, 138x415 ft., for which general contract recently was let to D. F. Harwell, Greensboro. The new unit designed by J. E. Sirrine & Co. will provide for about 18,000 additional spindles and auxiliary equipment. Company will also add 12,000 spindles at the Proximity mill. Entire program will cost $250,000.

Campbell Mfg. Co., Maiden, N. C., formerly the **Hightower Spinning Co.,** has completed an addition to the plant which will double the present output. Hosiery yarns 16s to 30s and ply yarns in the same numbers will be made.

Cross Cotton Mill, Marion, N. C., has awarded general contract to the Gaston Construction Co., Gastonia, N. C., for addition to plant, in connection with an improvement program. New equipment will be installed, the spindles to be replacements. Entire project will cost close to $125,000.

Clinchfield Mfg. Co., Marion, N. C., is installing the following equipment: In plants Nos. 1 and 2, one-process picking; one Barber-Colman automatic warper and spooler in No. 1 plant; in No. 2 plant, two complete units of the Barber-Colman automatic warper and spooler; Taylor automatic clocks are being installed on the slashers in both Nos. 1 and 2 plants; one Curtis & Marble shearing machine is being installed in each of Nos. 1 and 2 plants, and individual drive motors are being installed on spinning frames in plant No. 1.

Lydia Cotton Mills and **Clinton Cotton Mills,** Clinton, S. C., completed the installation of a new steam turbine plant and put the plant into operation early in March. This project cost nearly $300,000, and is being used to generate electrical power for the two mills. The turbines are sufficient to produce 8,000 hp.

Aiken Mills, Inc., Langley (S. C.) plant, has installed a new dye plant at a cost of approximately $20,000. Old cotton cards have been replaced by 75 late models.

Springs Cotton Mills No. 2, Fort Mill, S. C., is to be enlarged and modernized. The old spinning machinery will be discarded and new machinery installed. While there will be no additional machinery, the new equipment will require additional floor space. Contracts have been let. A similar modernization to the No. 1 mill was completed recently. The lighting systems of Mills Nos. 1 and 2 are being modernized under direction of F.-B Electric Co., Chester, S. C. The Springs plant at Lancaster is having its supplies department reconditioned. Addition to house 150 looms will be built.

TEXTILE WORLD'S

Wool Digest

RELIEF that the rules of practice and merchandising for four divisions of the wool textile industry have at last been signed is tempered by regret that so much time elapsed between their preparation and their enactment. Approval prior to the opening of the fall season would have been a boon to the trade.

However, now that the way is clear for the effectuation of these rules, it is to be hoped that no effort will be spared in their enforcement. Our recent contacts in the wool industry have left us with a none too pleasant impression of competitive conditions therein. Something must be done about it. The trade practice rules should supply the answer.—*Editor.*

Rules Approved but Compliance Held Up

National Recovery Administrator Johnson on March 27 gave official approval to the rules of practice and merchandising for four divisions of the industry—piece goods selling, blankets, commission combers and sales yarn. The rules provide for uniform sales contracts, sales orders not subject to cancellation except for failure to deliver, return of goods, terms, discounts, filing of samples and prices, etc.

The rules in each division are made effective only after a date is set by the Code Authority and seven days' notice given in advance. It is also stated that nothing in the plan shall "be deemed to interfere with the execution of contracts entered into prior to its effective date."

In reference to the consent decree entered against the former Wool Institute, it is said that the Department of Justice has no objection to the rules in their present form. Counsel for the Code Authority advises that District Court must first act before the consent decree may be modified to permit compliance with the rules. At present writing pending such action it is difficult to predict the effective date, although there is talk of holding them off till July 1 to avoid changes in the present mid-season.

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Season Starts with Conservative Prices

The fall season in men's wear began in mid-March when prices about 10% below previous levels were named. A fair business appeared in some quarters and a number of lines were withdrawn. There was considerable shifting about and more prices were withdrawn at the end of the month when it became known that the trade practice rules were likely to go into effect around the middle of April and the likelihood of a 10% wage advance appeared on the horizon. Both these factors tend toward higher prices, and wools will have to be considerably cheaper to compensate for them in holding prices unchanged.

Although clothiers' popular-priced lines seem to require goods less than $1.25, it appears that ⅜s blood worsted suitings range from $1.57½ to $1.75 and ½ bloods from $1.82½ to $1.92½. The 15 oz. ½ bloods range up to $2.50. Rumors and uncertainties beset the higher-priced lines. Of course cheaper grades have attracted most attention and woolens have fitted the buyers' purse with best facility. The result is that woolen mills are better fixed with business than worsted mills.

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Cleveland Worsted Workers in Flare-up

As a result of the usual allegations of discharge of United Textile Workers members among the employees of Cleveland (Ohio) Worsted Mills Co. a strike vote was taken on March 25 by a meeting of 600 out of a total of 1,600 workers employed by the mill. Violence between U.T.W. pickets, company-union workers and police resulted in a closing down of the mill on the same day. The Cleveland Regional Labor Board, the Commissioner of Conciliation of the U. S. Dept. of Labor and Carl Cummings, U.T.W. organizer, whose activities precipitated the trouble were said to be seeking a solution. T. F. McMahon, president of the International Emergency Council of U.T.W., warns of a sympathetic strike at the company's four other plants. Wages and hours are not mentioned in reports—sole issue seems to be whether the organization of Cleveland worsted workers will be effected under company or U.T.W. auspices. Hearing before National Labor Board was held in Washington April 6 and 7.

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New England Workers Prepare a Program

The New England Department of Woolen and Worsted Workers affiliated with the United Textile Workers met in Pawtucket, R. I., March 31, and formulated a program which they plan to offer with an ultimatum to wool manufacturers. The program includes higher wages and a 35-hour weekly maximum. The 375 workers who convened claimed to represent 50,000 in the mills. Ratification by locals will focus at another general meeting set for April 14. Organization work among workers in wool mills is said to be current.

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Still Higher Wages and Shorter Hours

Stillwater Worsted Mills has announced that its plants will operate on the 36-hour basis as asked by the President and Gen. Johnson, with the same pay for full shift work as on the 40-hour basis.

The Hockanum Co. advanced wages throughout the mill effective April 2 by 10%.

These two straws, coupled with the fact that labor is restive and that 1933 was not without its share of profit for many mills in the wool manufacturing industry, show the trend toward conditions which many believe must eventually be accepted throughout the trade.

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Wool Tops Decline

Wool top futures lost 4 to 6c. per pound between the last week of February and the last week of March, September, for example, fell from 109.3 to 102.7. Boston spots held firm at 112.5, which was the basis for several months until the last week of March, when 111.0 was registered. Business was generally quiet, with interest chiefly in late summer and fall positions.

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Woolen Rags Easier

The woolen rag market eased slightly during March. Wool manufacturers continued their interest in rags after almost withdrawing from the raw wool market, but only a brief period of quiet has had a more definite effect on rags than a longer period had on wool. Mixed soft woolens were sold for as much as 14½c. early in March and were available at 12c. at the end of the month. Rough cloth receded to 3c. after touching 3¾c. Fine light merinos sagged to 22c. after selling for 24c.

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Wools Quiet and a Bit Easier

Three months of restricted purchasing by mill interests finally have resulted in some slight easing off in wools. The market for the first time in several months closed at the low instead of the high for the month. The decline, however, is comparatively trivial, and, as wool stocks have been well culled over, it may be that the absence of any sizable quantities of good wool account in part for the slight decline in territory and fleece wools. Prices in greasy

combing wools for the first quarter of the year have been in equilibrium, but at the opening of the second quarter show a slight softening, which leaves the market at the beginning of April slightly lower than the average price for March.

Some recognition of the easier tendency in values is found, though it is felt that higher prices on wools may be seen later in the year, provided the general recovery in public buying-power warrants some advance in clothing prices. Sentiment is somewhat divided as to the immediate future of wool and the market is more of a two-sided proposition than it has been for the last 12 months. There is no actual weakness and yet the situation seems to indicate an incipient softening of values which some traders believe may bring prices down to a slightly lower level.

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Price Pressure in Women's Wear

There is continued difficulty in getting prices which permit good quality in women's wear woolens. With much of the business between 65c. and $1.12½, it is obvious that manipulation must take a hand. The price range is fairly well set by what may be had in cotton, or rayon or silk. Of course higher-priced numbers sell, but not in the bulk class. One of the trends is toward novelty weaves, and lines of women's suitings stress basket weaves, hopsacks, knotted effects, herringbones, etc. These often appear in fabrics which are frankly not woolens at all, such as the line of imported ramie novelties offered by Lesem Bach & Co. Women's wear as a whole is still interested in spring and summer fabrics.

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International Wool Conference in June

The next International Wool Conference is scheduled to be held in Rome, Italy, June 18, 19 and 20. Maurice Dubrulle is president. The agenda includes tariff policy and conditions of sale by British Wool Federation and the Deutsche Wollvereinigung as they affect international trade.

Get Fabrics as Well as Fish from the Sea

The Portland-New York steamer "Sagamore" of the Eastern S.S. Co. which was beached near Prouts Neck, Maine, on Jan. 14 was salvaged to a certain extent and then the company advertised the vessel as abandoned. Local fishermen discovered that several hundred bolts of fine Worumbo Mfg. Co. worsteds were still in the wreck and by hard work recovered most of it. They sold $4 and $5 cloth for 35c to $1, using it for new suits for themselves, their wives and children, for blankets and other things. Pine Point and Scarboro Beach are now the two best dressed fishing communities on the coast. Lobstermen and clam diggers are parading in new suits and overcoats of the finest textures. Washed in fresh water and pressed, the cloth seemed as good as new.

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Activity of Industry

Current statistics on wool consumption and mill activity follow, the activity percentage being based on single 40 hour shift, 5½ days per week:

Wool consumed:	January	February
Total clean equivalent (excluding carpet)	12,512,000	12,075,000
Carpet wool (grease)	8,059,000	7,697,000
Activity machinery:		
Looms (50" and wider)	82.5%	91.4%
Carpet looms	44.0%	53.0%
Combs	90.5%	84.8%
Worsted spindles	64.2%	63.4%
Woolen spindles	87.5%	103.1%

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A Few Typical Openings

Among openings of fall lines during March the following are typical:

American Woolen Co.: 4001, $1.97½; 9112, $1.40; 9270, $1.25.

Cyril Johnson Woolen Co.: 70 cassimere, $2.10; 14 covert, $2.95; 881 grampian frieze, $3.60.

Princeton Worsted Co.: overcoatings range from $2.75 for fine 17 oz. topcoating to $6.25 for 27 oz. 100% cashmere fabric at $6.25.

L. Bachman & Co.: cotton-warp decorated piece dyes 95c. and $1.00.

Riverside & Dan River Cotton Mills: all cotton and part worsted-filled fabrics, 23½c. to 52½c.

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Wool Mill News

Somersville (Conn.) **Mfg. Co.** has settled its labor differences by advancing wages of skilled workers 15% and unskilled 12½%.

Amana Society, Cedar Rapids, Ia., has given up its communal plan of operation of its woolen mills and been elected a member of the local chamber of commerce.

Battie Woolen Mill property, Camden, Me., has been sold by J. H. Montgomery and Dr. W. F. Bisbee, its owners, to John T. Hughes. Mr. Hughes has been operating the mill since March 1, 1932, under lease and agreement to purchase. Most of the time the mill has run night and day.

Priscilla Turner Hooked Rug Co., Lewiston, Me., has incorporated for $50,000 with Paul M. Clark, manager for the last three years, as president. It is proposed to extend the line from rugs to other fabric products.

Bedford Textile Co., Bedford, Mass., will make extensions and improvements in former Ram's Head Mill of American Woolen Co., Middlesex Street, Lowell, Mass., recently purchased, and will have structure ready for occupancy at early date. About 59,000 sq.ft. of floor space will be available at plant.

Zeltex Woolen Mills, Inc., Cherry Valley, Mass., recently formed by Israel S. Zelkind, head of the Zelkind Waste Co., Worcester, Mass., and associates, have taken over the former Brick City Mill, Cherry Valley, and will remodel and equip for new plant for manufacture of carded woolen products. It is proposed to have mill ready for service at early date. Claire Taylor will be in charge of production. Mr. Zelkind will be president and treasurer of the new company.

Felters Co., Millbury, Mass., is considering construction of new one-story addition, to be used primarily for laboratory and allied service.

Aetna Mills, Watertown, Mass., has disposed of its three main buildings to **John T. Lodge & Co.** which will move its garnetting plant from Roxbury to the new location. Sale by auction was on March 23. Machinery had been previously sold or removed to Sheriffs Worsted Co., Fitchburg.

Branch River Wool Combing Co., North Smithfield, R. I., has broken ground for new two-story addition, 35x 115 ft., for which general contract recently was let to Lamoureaux Brothers, Woonsocket, R. I. New unit will be equipped for expansion in scouring division.

Textile Weavers, Ltd., recently incorporated to manufacture woolen fabrics, has started operations in the town of Grand'Mere, Que. Twenty looms and other equipment have been installed in an idle factory building and operations are being directed by Walter Maughan, president of Textile Sales Ltd., Montreal, owners of Textile Weavers.

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Wool Financial Notes

Stillwater Worsted Mills reports net profit for 1933 of $902,636, against similar profit of $10,636 in 1932. Net working capital on Dec. 30 was $1,924,217, up $417,538 in the year.

M. J. Whittall Associates, Ltd., Worcester, Mass., are being operated by Geo. H. Mirick and Frederick R. Allen as permanent receivers. Appointment of temporary receivers was reported last month. The court made them permanent on March 25.

F. A. Bochmann & Co., Philadelphia, Pa., will be liquidated and the firm which was founded in 1889 will retire from business. Its present equipment is 300 looms.

Fabyan Woolen Co., Stamford, Conn., has reduced its common capital stock from $600,000 to $400,000.

Hodges Carpet Co., Indian Orchard, Mass. reports net profit for 1933 of $55,963 on net sales of $1,500,000.

TEXTILE WORLD'S

Rayon Digest

THE textile industry has the major stake in the Fashion Group's Exhibition of Fashions and House Furnishings in "Man-Made" Materials, on view April 2 to 29 in the R.C.A. Building, New York. This group of women executives and artists in the fashion world has performed a real service by dramatizing so effectively the contribution which laboratory research has made to beauty. The participation of several major synthetic fiber producers indicates that the industry itself appreciates the importance of this contribution.

There is still time to attend—and those within reach of the exhibition are advised not to miss it.—*Editor.*

Report Extended Call for 150s

An unusually heavy call by weavers for 150 deniers which some yarn producers attributed to the backward spring, was the feature of the rayon market when the current month opened. Normally at this time, weavers turn strongly to 100 denier, because of its lighter weight, but up to April 2, only a moderate quantity of this business had been placed. Rayon woven goods enjoyed a sudden pick-up toward the end of March which served to spur the demand for yarns and producers began writing substantial volume for May delivery. Knitters placed fair-sized orders; demand from the knit goods market continues to decline in percentage compared with the call from weavers, though the poundage is substantially unchanged.

Price tone in all divisions appears to have completely recovered from the after-effects of the acetate revision. Viscose yarn companies report that the lower acetate prices have not reduced their volume to any noticeable degree, and acetate producers also enjoy active demand.

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Celanese to Make Acetate Linings

With the aim of more adequately meeting competition of viscose yarns in the lining field, the Celanese Corp. of America has decided to undertake manufacture of linings, a field which the firm hitherto had left to its yarn customers and converters. It is understood that Celanese will make only all-Celanese linings, leaving the mixed fabric field to the open market.

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Again That Tax!

With the rayon processing tax issue still unsettled, some producers were apprehensive at the end of March that continued uncertainty might have an adverse reaction on the market. Certain weavers, it was reported, were worried that, if the tax went through and they had to lay out large sums in payment, they might have to wait some time for reimbursement from customers. For that reason, these weavers are inclined to hold down on yarn orders. Producers say this anxiety is unwarranted. They point out that the tax, if any, would become effective on a certain date and, as most mills have a tax clause in their contracts, they are thus protected, and should find it a simple matter to pass the added charge along to their customers.

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Code Amended

Amendments to the rayon and synthetic yarn code to specifically include acetate producers and to provide for the set-up of a code authority were approved by the NRA officials March 28.

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Labor Plans Drive

Tentative plans for a drive to force wage raises throughout the rayon industry were announced this month by the United Textile Workers of America at meetings in New England and in Washington, D. C.

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Glanzstoff Reports $1,288,578 Net

Reports of American Glanzstoff Corp. and American Bemberg Corp. respectively for the year ending Dec. 31, 1933, both show decidedly improved position. The Glanzstoff company reports a net profit of $1,288,578 against a net loss of $451,443 in 1932; the Bemberg company shows a profit of $510,946 against $603,619 loss in the previous year. Commenting on the Glanzstoff showing, S. R. Fuller, president, said this was the first year since beginning operations that the company's results have been satisfactory. Simultaneously it was made known that Glanzstoff stockholders have been asked to approve changing that company's name to North American Rayon Corp., which it is stated "would be to the best interests of the company."

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New Rayon Straw

Interest in the merchandising prospects for rayon straw was accentuated during March, following the news that a new type of spun synthetic straw, made by River Mills, Inc., of Woonsocket, R. I., from staple straw fiber produced by Belamose Corp., of Rocky Hill, Conn., has been placed on the market. The new straw, known as "Wulstraw," is being offered to the millinery trade at present; it is made of yarn spun on the Belgian system and is claimed to have distinctive characteristics.

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Soviet May Use Furness Process

Commenting on reports from Moscow that the U.S.S.R. would begin shortly to produce cuprammonium yarn and was likely to employ the Furness process, William H. Furness, inventor of the process bearing his name, stated March 18 that he would be glad to cooperate in the undertaking. He emphasized that he holds "legal right to all of the foreign patents bearing his name," and indicated he would be ready to consider an arrangement with the Russian government on that basis. The Moscow report said the Soviet's decision to use the cuprammonium process was prompted by a desire to relieve the national shortage of sheer hosiery and women's underwear. At present, rayon yarn manufacture in Russia is limited to three viscose plants and one staple fiber plant.

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Japan's Output Rises

Continued advance by Japan in the production of rayon yarn was evident in the report of the Japan Rayon Producers' Association made public by the Department of Commerce, Washington, March 22, that output during 1933 totaled 90,428,530 lb. against 64,389,590 in 1932 and 46,764,130 in 1931. Exports totaled 8,934,000 lb. in 1933 against 7,086,000 in 1932 and 2,511,000 in 1931.

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German Exports Rise

Exports of rayon materials and manufactures from Germany increased both in volume and value during 1933, according to a report to the Department of Commerce from Consul J. F. Huddleston, Dresden. The gain was especially significant in that during the last year numerous countries tightened their restrictions against German rayon ma-

terials and products. Total 1933 shipments in this field aggregated 4,581 metric tons, valued at $17,815,728 against 3,950 tons, valued at $17,199,308 in 1932. Total shipments of "silk and rayon yarn," which division was mostly rayon, also showed a gain in 1933.

•

Yarn-Dyed Rayon Shirtings Shown

Rayon merchandising interest centers this month on several important developments in yarn-dyed fabrics, including shirtings. In one instance a rayon shirting has been made from spun yarn used in combination with another yarn. Such of the shirtings as have been shown so far are distinctive and pleasing and might well give real competition to the best cotton shirtings. The yarn-dyed merchandise includes various dress fabrics; they are offered in checks and stripes, some resembling woolens or linens. Mills also report keen interest in the new washable prints and in novelties, the latter being highlighted for coatings.

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Waste Samples Sought

Moderate interest, with buyers' activity devoted largely to sampling was reported through March in the rayon waste market. Noil prices weakened somewhat in Boston, but New York houses showed resistance to the decline. Spun yarns were in fair call and the outlook at this end was regarded as improved. In Boston bleached semi-luster open waste was quoted in mid-March at 21-22c. and bleached dull luster open waste at 20 to 21c.

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Bemberg in Museum

The chemical and industrial evolution of cuprammonium yarn from the raw material to the finished textile is depicted in an unusual exhibit which is being held under the auspices of the American Bemberg Corp., at the Newark (N. J.) Museum. The exhibit shows raw materials, fabrics, apparel and a modern room furnished in cuprammonium textiles, all being contributed by the Bemberg Corp. The show opened March 26 and will continue for two months. The latest fashions in undergarments were displayed by the same company at a showing of intimate apparel held by Mode Magazine at the Plaza Hotel, New York, March 15.

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Rayon Mill News

Tubize Chatillon Corp. closed the acetate department of its Rome, Ga., rayon mill on April 1. The $4,000,000 plant which in the last few months added an addition costing about $3,000,000 to its viscose department has been running full on viscose yarn since July. Closing of the acetate department, which has been curtailing, will affect about 130 operatives.

Greensboro (N. C.) Weaving Co. is completing a brick and steel building for rayon weaving at a cost of $70,000. The building will house 400 looms. Contract let to Angle-Blackford Co.; J. Spencer Love, president of the Burlington Mills Co., represents the principals.

DuPont Rayon Corp. is completing plans for an addition to its Acele manufacturing unit at Waynesboro, Va. A housing project to care for 350 added employees and their families is under way. The DuPont company is also about to expand its viscose process plant at Ampthill, Va., at cost of about $5,000,000. Plans call for an increase of 50% in floor space with 750 added to the payroll. DuPont is also improving the set-up in its Old Hickory (Tenn.) plant by moving its laboratory to a new location and refitting it.

Courtaulds (Canada) **Ltd.,** Cornwall, Ont., announce that the work of installing rayon yarn spinning machines and essential auxiliary equipment in the new No. 3 unit, construction work on which was completed early in March, is proceeding satisfactorily. Men are also engaged in placing additional machinery in the churn and mixer department which has also been extended.

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Rayon Financial Notes

Celanese Corp. of America reports net profit, after all charges, of $5,453,902 for the year ended Dec. 31, 1933. This compares with a net profit of $891,865 in 1932.

Skenandoa Rayon Corp., Utica, N. Y., reports net profit for 1933 at $139,000 comparing with a net loss for 1932 of $69,651.

Tubize-Chatillon Corp. reports net income for 1933 of $309,565. Because of a change in financial structure a direct comparison with 1932 is not possible, but a somewhat similar account showed net loss of $185,000 for 1932.

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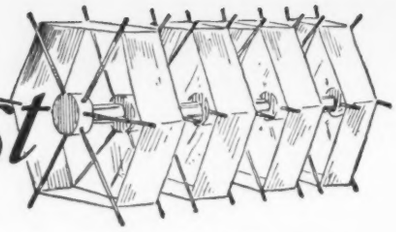
An important group of visitors at the "Man-Made Materials" show staged by the Fashion Group at Rockefeller Center and described on page 111 of this issue. Reading from left to right, front row: Miss Helen Chadwick, Procter & Gamble; E. C. Harrington, DuPont Rayon Co.; John A. Spooner, Viscose Co.; J. J. Murlein, American Glanzstoff Co.; Mrs. Alice Sharkey, director of the Exhibition; top row, Theodore I. Dunn, Tennessee Eastman Co.; Allan Brown, Bakelite Corp.; E. C. Morse, American Bemberg Corp.; Standish W. Holmes, Viscose Co.

TEXTILE WORLD'S

Silk Digest



THE problem of the effect of NRA upon small industries, so acute in practically all branches, is particularly serious in silk manufacture. The "family shop" is a unit which demands special consideration and special provisions. The Silk Textile Code Authority has wisely recognized that fact. The plans for a Silk and Rayon Workers Guild, outlined elsewhere in this department, represent a sane approach to a difficult question.

Incidentally, this division of the textile industry is to be congratulated upon its appointment of Peter H. Van Horn as chairman of its code authority. He has demonstrated already his possession of one vital asset: courage. In his first public address, he spoke in a way which promises he will not be a "yes" man. And that helps.—*Editor.*

Van Horn Urges Cooperation on Code

Three major developments marked the month in the activities of the Silk Textile Code Authority. These developments, in order of importance, were: The assumption of office by Peter H. Van Horn, recently elected chairman of the authority, and his outline of the industry's problems as presented at a testimonial luncheon in New York March 23; second, plan for formation of a Silk & Rayon Workers Guild to solve the "family shop" problem in Paterson, N. J.; and, third, the appointment of a committee to organize an Industrial Relations Board for the silk textile industry.

Mr. Van Horn's address at the luncheon was important as giving the first indication of his policy for the Code Authority. Basing his findings on ten days of intensive study with trade leaders, he said that many silk and rayon manufacturers were so close to individual problems they had lost sight of the N.R.A.'s real opportunities. He urged subordination of petty differences to the interest of the industry as a whole. Asserting that the Washington code conference showed industry was doing a "rotten job" as regards cooperation with the N.R.A., he proposed that a general conference of all code authorities be held in New York City with the aim of giving more "constructive aid to Washington."

The term "family shop" applies to loom owners who also operate the machines, and it is estimated that half the Paterson silk mills now are owned and operated within families. Since these weavers are neither employer or employe, the code does not strictly cover them; the new plan is to give them, through the Guild, more simple rules which would help them and also conserve the best interests of the industry. Proposed benefits include: a standard form of contract, standard commission work rates, and subsequently a fund both for vocational training and for loans to permit machinery repairs, etc.

The projected Industrial Relations Board will be modeled in structure and function after the one now operating in the cotton industry. Appointment of John S. Burke, as Government representative on the Silk Code Authority succeeding L. R. Eastman, was made.

A hearing on proposed code amendments will be held April 18 at Washington. Suggestions include proposals to increase membership of Silk Code Authority, determine "reasonable cost," provide standard sales contracts, restrict expansion of capacity, and regulate advertising.

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Silk Federation Has Name at Last!

The long-pending question of a new name for the reorganized Silk Association of America now appears to be permanently answered. The members have voted that the federated body should be known hereafter as the National Federation of Textiles, Inc. This name was adopted at a general meeting held March 26, at the New York headquarters. The name takes the place of Federated Textile Industries, Inc., which title was opposed in a court action instituted by Federated Textiles, Inc., a commercial company, as being too similar to its own.

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Japan Votes $250,000 to Guild

Prospects of a vigorous battle by raw silk interests here and in Japan to win back silk's waning popularity among ultimate consumers were considerably strengthened at the end of March, with the news that the Central Raw Silk Association of Japan had voted more than $250,000 to the International Silk Guild. The sum will be spent by the Guild on promotional and educational activity, with the aim of stimulating consumer interest in and demand for silk merchandise.

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Recommends Inclusion of Labeling Provision in Silk Code

The consumers advisory board of the NRA has recommended that the silk textile code be amended to include a clause calling for standards dealing with silk weighting, fabric identification, color fastness, and quality-identifying labeling. The advisory board points out that among the preliminary drafts of the code made by the Silk Association one contained the following clause:

"It is hereby declared to be fair competition for each member of the silk and rayon industry to mark clearly upon each piece of fabric sold by him, so as to indicate whether such fabric is silk, rayon, silk and rayon, or other combination of textile fibers; and if silk whether pure dye or weighted. This marking shall be placed at the end of each piece of material and on each wrapper and invoice for such merchandise."

This clause, however, was dropped out before the public hearing; and inclusion of somewhat similar clauses advocated during post-hearing conferences were not included in the approved code, although there is no record of expressed opposition to these clauses.

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Silk Market Study Out Next Month

A statistical market analysis of the broad goods industry, comparing conditions before and after the silk textile code and giving the results of a three-year study of production and distribution problems, is to be published in book form next month by the National Federation of Textiles, Inc. The study was undertaken with the cooperation of the Textile Foundation and was financed partly by the Foundation and partly by voluntary contributors.

The book will represent the first comprehensive analysis of all-silk and silk-and-synthetic broad goods. Since it will deal primarily with recovery problems, it will be especially timely. It will comprise four sections: (1) Introduction; (2) General Summary; (3) Production; and (4) Distribution.

The original committee on the collection and interpretation of the data for the survey was composed of B. Edmund David, of B. Edmund David, Inc., chairman; Paul Hyde Bonner, Stehli Silks Corp.; Ewald H. Schniewind, Susquehanna Silk Mills; Thomas B. Hill, Greyco Sales Corp.; Fred W. Shibley, Bankers Trust Co.; Ramsay Peugnet and George C. Sommaripa, of the Silk Association of America (now the National Federation of Textiles, Inc.). Upon completion of its work, this committee relegated to the Planning and Research Bureau of the association the task of analyzing, tabulating and inter-

SILK EVENING DRESS of crepe back satin, designed by Elizabeth Hawes, who was the first to use the new "pure silk" label, introduced by the International Silk Guild in its silk promotion campaign. The fabric is from Wm. Skinner & Sons. With "truth in fabrics" as its keynote, the Silk Guild is popularizing two labels—"pure silk" and "pure silk weighted"—for use in identifying silk merchandise sold to consumers. In the model shown above, the material is used on the crepe side.

preting the assembled material under the direction of Dr. Melvin T. Copeland, of Harvard University Graduate School of Business Administration. The editor of the study is William H. Turner who is assisted by Frank J. G. Duck, both formerly with McGraw-Hill Publishing Co.

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Velvet Code Authority

The Code Authority for the Velvet Industry has assumed office following approval by Gen. Johnson of the method of selecting the personnel. The members of the board, all of whom will serve for one year or until successors are appointed, follow: Frank R. Wheeler, Wm. Openhym & Sons, New York City; Ward Cheney, Cheney Bros., New York City; R. E. Knup, J. B. Martin Co., Norwich, Conn.; Herbert E. Schell, Sidney Blumenthal & Co., New York City; and John M. Balsam, Mace Manufacturing Co., Brooklyn, N. Y.

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Petticoat Vogue Helps "Rustle" Fabrics

Prospects of a sharp increase in demand for taffetas and the other "rustle" fabrics due to the petticoat revival were strengthened this month with the news that the Paris showings included an important display of petticoats by Worth. These garments were designed to accentuate the draping effect of the trained evening dresses. The Worth petticoats are made of taffeta, soft silk, mousseline de soie, marquisette and lace, some having abundant ruffles and ribbons.

SILK IN THIS ISSUE

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Throwsters Split on Machine Restriction

A wide divergence of opinion among commission throwsters on the question of further curtailing machine hours, was manifest at a general meeting of the industry held March 17, under the auspices of the Code Administration Committee. The proponents of curtailment argued that profitable throwing prices could not be expected when the industry needed only 60% of its present allowed capacity to take care of current needs. Those opposed stressed the fact that rayon weavers would not be included in such curtailment as they come under the Cotton Code, and also argued that it would be wrong to penalize throwsters who enjoy good demand at good prices on a capacity basis.

Weaving and knitting mills which operate throwing machinery or give out yarn for commission throwing must conform to price provisions of the throwing industry code, according to a ruling of the NRA legal department, it was announced April 11 by Dean Hill, executive secretary of the Throwsters Research Institute.

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Raw Silk Suffers Further Decline

A slight pick-up in demand from hosiery manufacturers was the sole encouragement which a rather disappointing month brought to the raw silk market in New York. Weavers showed scant interest, and importers were doubtful as to when these mills might begin buying. The lack of demand from that end was further aggravated by the continued arrival of raw silk of defective quality, importers stated.

Raw silk prices have dropped about 10 cents; Crack XX 13/15 white, 78% receded from $2.50 Feb. 26 to $2.40 at the end of March.

Importers looked for a weakness in Japan shortly, due to the continued accumulation of unsold raw stocks at the export points there.

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Fabric Stocks 19.5% Below March, 1933

Stocks of silk and rayon fabrics on hand in silk mills on March 15, totaled 45,949,828 yd., a gain of 8.4% over stock on hand Feb. 28, according to a summary issued by the Silk Textile Code Authority through the Planning and Research Bureau of the National Federation of Textiles, Inc., formerly the Silk Association of America. This total represents a drop of 19.5% from the stock total of March 15, 1933.

Production of all fabrics in the first half of March, 1934, aggregated 12,313,705 yd.; all-silk fabrics led with 48.1%, synthetics were second with 42.9%, the remainder being in other fabrics. This output was 22.1% above the second half of February, 1934 and 23.6% above the first half of March, 1933.

The National Federation also announced that replies to a questionnaire show an 11% increase in employment and a 21% increase in average wages since enactment of the silk textile code.

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Silk Mill News

Em-Ess Silks, Inc., Paterson, N. J., has been organized by Sidney Kitay and associates, represented by David Cohn, 115 Market Street, city, with capital of $150,000, to operate a broad-silk mill.

Superior Fabrics, Inc., Paterson, N. J., is planning early occupancy of former plant of the Onondaga Silk Co., Inc., 131 Shonnard Street, Syracuse, N. Y., recently secured under lease, following vacation by the Onondaga company, which removed the majority of equipment to main mill at Easton, Pa.

Reliable Warping & Winding Co., Inc., Paterson, N. J., has been organized by Max Unuk and A. M. Kaufman, 136 Washington Street, with capital of $100,000, to operate a local mill.

Lieberman Silk Co., McAdoo, Pa., has leased additional space in the building comprising its plant in that town. New looms and other equipment are to be installed.

Quinfort Silk Mills, Inc., Pawtucket, R. I., has been formed by Adrien Fortin and Walter Adler of Providence and Edgar L. Quintin of Attleboro, Mass.

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Silk Financial Notes

H. R. Mallinson & Co. reports net loss of $295,146 for 1933, compared with a net loss of $200,416 for 1932. The loss in 1933 is ascribed to the silk weaving and finishing strikes.

Bruck Silk Mills, Ltd. of Canada are arranging for an increase in capital stock from 100,000 to 125,000 shares of which 25,000 shares are to be issued, underwritten at $18 per share.

TEXTILE WORLD'S

Knit Goods Digest

ONE of the advantages of the NRA is that, in addition to producing the main results for which it was planned, it tends to encourage a number of corollary developments of a constructive nature. This is natural, since an attempt to develop a code of fair competition focuses attention upon many situations which require clarification.

A case in point is the impetus given to standardization work in the knit goods industry. Although this effort dates back years before NRA, it has been spurred on noticeably in the last nine months.

The completion of new standards on hosiery lengths and the development of minimum measurements for woven underwear are examples. The trend is a healthy one.—*Editor.*

Underwear Data Report Expanded

A new form of report on underwear production, shipments, stocks and orders has been issued by the Bureau of the Census of the Department of Commerce. The report which covers the month of December, 1933, has been rearranged and enlarged allowing for a clearer and more complete statistical picture.

The report is based on figures from 411 manufacturers and is preliminary. Key figures in dozens of garments (other than glove silk and rayon lines) follow:

	Month's Output	Shipments During Month (less returns)
November, 1933	1,600,039	1,363,959
December, 1933	1,264,611	869,551
	Knitting Machine Activity (by hours, under code)	
November, 1933	2,572,525	
December, 1933	2,195,332	

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Plan Hosiery Wage and Output Studies

The principal activities of the Hosiery Code Authority during the month were: Appointment of a committee to restudy minimum wage provisions of the code in the light of NRA experience; appointment of a special committee headed by J. P. Margeson, of Phoenix Hosiery Co., as chairman, to survey the whole question of curtailment of output; and the announcement of plans for a trade-wide conference at Philadelphia, April 23, incident to the Knitting Arts Exhibition.

Meanwhile report on wage-scale survey ordered by the Full-Fashioned Hosiery Association was submitted at a meeting in Philadelphia, March 18.

At the end of March, Earl Constantine, managing director of the National Association of Hosiery Manufacturers, announced that the Authority's field staff, under direction of Reuben C. Ball, had begun work in the various hosiery districts. This staff will investigate complaints of alleged code violations.

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Labor Disputes

Labor difficulties during the month in the hosiery industry were widespread; they hinged largely on the celebrated section 7a of the NIRA. Charging violation of this law, 350 workers at the Bear Brand Hosiery Co. mill in Beaver Dam, Wis., went on strike March 20, and Henry Pope, president of the company, later moved to confer with the National Labor Board on the matter. The Regional Labor Board of Atlanta, Ga., has found the Hatch Full-Fashioned Hosiery Co., of Belmont, N. C., guilty of coercing employees to prevent them joining a union; reinstatement of all workers discharged for union activities also was ordered.

The National Labor Board has referred the case of Harriman Hosiery Co., of Harriman, Tenn., to the NRA Director of Compliance and to the Department of Justice for action. This firm, the Board held, refused to comply with the collective bargaining provision of the NIRA. The dispute between the Real Silk Hosiery Co., Indianapolis, Ind., and the American Federation of Hosiery Workers over discharge of two union members, was aired at a hearing before the National Labor Board, subsequent to which on March 28, the Board reversed the decision of the Indianapolis Board which had ordered reinstatement of discharged workers. On April 6 a strike was called by the local branch of the American Federation of Full-Fashioned Workers in all Real Silk mills in Indianapolis.

One obstinate cause of friction between labor and employers is believed to have been eliminated by the decision of major hosiery mills in the Reading, Pa., district to furnish needles to operatives at half cost.

Hosiery Output and Shipments Rise

Hosiery production and shipment in January, 1934, showed a considerable increase over December, 1933, according to figures made public by the Bureau of the Census of the Department of Commerce. Key statistics, in dozen pairs, for 338 identical manufacturers representing 395 mills follow:

	Knit	Net Shipments
January, 1934	4,281,159	4,073,085
December, 1933	3,889,803	3,915,689

Comparative summary for 1933 and 1934 covering 274 identical establishments representing 331 mills:

	Knit	Net Shipments
January, 1934	3,723,162	3,548,953
January, 1933	4,170,297	3,518,684

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New Underwear Standards

Specifications of minimum measurements for woven underwear were made public by the Underwear Institute and the Bureau of Standards of the Department of Commerce, March 20. The standards were developed by Charles H. Hamlin, as research associate of the Underwear Institute, with the aim of lessening unfair competition among manufacturers and increasing the satisfaction of the ultimate wearer. The survey, which was begun in July, 1933, covers men's woven shorts, men's and boys' union suits, children's woven waist suits and other lines.

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Berks Co. Conclave

The Berks County Hosiery Employees Association will hold their first annual conclave on April 20 at the Rajah Temple, Reading, Pa. The organization is a voluntary, non-salary-paying body, said to comprise 4,000 hosiery and other knitting workers in Berks County. Raymond D. Trautman, Reading, is corresponding secretary.

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Swimsuit Strike Worries Market

The possibility of a swimsuit shortage was causing concern in some divisions of the outerwear industry as April advanced with no prospects of peace in the Philadelphia swimsuit mill strike. This walk-out, which was called by the Knit Goods Workers Union of Philadelphia, and became effective March 22, rendered more than 1,000 workers idle, according to police estimate. The chief demands are: closed shop, a 35-hour week and a general wage raise.

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Infants Wear Now In Outerwear Code

The National Recovery Administration on March 28 terminated the stay granted manufacturers of infants' knitwear, thus putting this division under the knitted outerwear code.

Guide to Knitting Arts Exhibition

(Continued from page 79) hosiery produced on Reading full-fashioned machines.

Textile World, New York. Booths 89-92. Textile publishers.

Textiles, Inc., Sales Co., Gastonia, N. C. Booth 282. Cotton, spun rayon, and wool mixture yarns; fabrics made from novelty yarns.

Torrington Co., Torrington, Conn. Booths 276, 277. Knitting machine and sewing machine needles.

Tubize Chatillon Corp., New York. Booths 285, 288. Hosiery, underwear and dress fabrics made of Chardonize and other Tubize yarns.

Underwear & Hosiery Review, New York. Booths 77-80. Textile publishers.

Union Special Machine Co., Chicago. Booths 272, 273. Sewing machines for manufacture of underwear and hosiery. Featuring a new line of high-speed overedging and overseaming machines, including the 39,000 series, a combination blind-stitch hemming and overseaming machine.

United Elastic Corp., East Hampton, Mass. Booth 323. Elastic and non-elastic braids, lacings, cords, etc.

U. S. Ring Traveler Co., Providence, R. I. Booth 184. Ring travelers for throwsters and novelty-yarn manufacturers. Featuring a number of new improvements in ring travelers including the magnetic traveler applicator. An electrical display unit will show various travelers in operation on lubricating rings of the latest designs. Featuring also the new Ne-Bow vertical silk and rayon traveler with the Ne-Bow lip.

U. S. Testing Co., Hoboken, N. J. Booth 355A. Raw silk and thrown silk testing.

U. S. Textile Machine Co., Scranton, Pa. Booths 282-A, 295, 320. Oilless winder, high-speed oilless redraw frame, Acme ball-bearing double-deck twister.

Universal Winding Co., Boston. Booths 123-128. Winding machines.

Viscose Co., New York. Booths 292, 293. Rayon yarns and fabrics.

William Whitman Co., Inc., New York. Booth 330. French-spun worsted and merino yarns, Bradford-spun worsted yarns, cotton-spun worsted and merino yarns and blends, spun rayon yarns, carded and combed cotton yarns.

Wildman Mfg. Co., Norristown, Pa. Booths 93-98. Full-fashioned hosiery machines and circular machines.

Willcox & Gibbs Sewing Machine Co., New York. Booths 278A, 279A, 306-309. Sewing machines mounted on sectional and individual power tabling and equipped with a recently introduced electric transmitter. Featuring the flatlock machine for seaming knit rayon and athletic underwear and similar garments. Feldlock and Feldlock dual-feed machines for lap-seam felling on shirts, pajamas, overalls, and work shirts; lockstitch, overlock, and intermittent yoke ruffling, chainstitch label, Cornely & Uniart embroidery machines; and lockstitch pinking and seaming machines.

Jacques Wolf & Co., Passaic, N. J. Booth 350. Textile chemicals. Featuring sulphonated castor and olive oils with a high combined SO_3 content, delustering compounds, soluble silk oils, rayon knitting oils, rayon lubricants, waterproofing compounds, and Monopole oil. Emphasizing also a new boil-off oil for degumming and dyeing hosiery in one operation.

Thomas Wolstenholme Sons & Co., Philadelphia. Booths 332, 333. Underwear, hosiery, sweater, and zephyr yarns.

The following were received too late for alphabetical arrangement:

Bay State Thread Works, Springfield, Mass. Booth 52. Sewing threads.

Pyam L. Gilkey, Philadelphia. Booth 326. Knitting yarns.

Industrial Dryer Corp., Stamford, Conn. Booth 154. Silk conditioning unit.

Permutit Co., New York. Booth 364. Zeolite water softeners; single-valve control unit, mechanical CO_2 indicator and recorder.

San-Knit-Ary Textile Mills, Philadelphia. Booth 37A. Net bags for hosiery dyeing, etc.

Wolf Bros., Philadelphia. Booth 37.

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Knitting Mill News

Carmichael Hosiery Mills, McDonough, Ga., have completed an annex which almost doubles their floor space.

Blood Knitting Co., Amsterdam, N. Y., is sponsoring erection of a new filtration plant which will aid mills in that city.

Gilbert Knitting Co., Inc., Little Falls, N. Y., has begun an improvement program at its branch mill at Fort Plain, N. Y., formerly the plant of the Bailey Knitting Co. New machinery will be installed.

Mayburn Knitting Mills, New York, will move to new quarters at 352 Fourth Ave. before May 1. Plans are to install additional machinery.

Dr. F. B. Hicks, Hickory, N. C., formerly identified with the G. & H. Hosiery Co., with local mill, is organizing a new company for similar line of manufacture, and has begun construction of a one-story mill, 30x75 ft., on State Highway No. 17, for initial plant. About 50 knitting machines and auxiliary equipment will be installed.

Walton Knitting Co., Hickory, N. C., has let general contract to M. G. Crouch, Hickory, for new one-story mill, 40x140 ft., at Mill and Church Streets, including dye house and boiler plant. It is estimated to cost over $30,000.

Elizabeth James Hosiery Mills, Marion, N. C., are installing new machinery and equipment at an outlay of $25,000, as part of the $50,000 improvement program contemplated for the plant at the outset of 1934.

Jantzen Knitting Mills, Portland, Ore., is said to be contemplating a new branch plant in Buenos Aires.

Alfred L'Heureux & Sons, Philadelphia, glove silk, jersey cloth, etc., has removed to larger quarters at Dauphin and Tulip Streets.

State Center Knitting Co., recently organized, has established a knitting mill in Shinglehouse, Pa., furnishing employment to 40 workers.

Charles H. Bacon Hosiery Mill is constructing an addition to its Loudon (Tenn.) plant. It will contain 25,000 square feet on each of three floors.

Morristown (Tenn.) **Knitting Mills** have purchased machinery and equipment of the Spring City (Tenn.) Hosiery Mills, and will remove to Morristown.

Bassett (Va.) **Knitting Mills, Inc.,** have been purchased by the Gardiner-Warring Co., Inc., of New York, which company operates a plant at Florence, Ala. The new owners will continue to operate the company as the Bassett Mills, Inc. J. T. Flagg is president and treasurer of the operating company; R. P. Scott is superintendent.

Pannill-Walker Underwear Co., Martinsville, Va., is a new textile plant which has let contract for a plant of 24,000 sq.ft. floor space. Corporation is capitalized at $70,000. D. S. Pannill is president and treasurer, S. S. Walker, vice-president, and W. L. Pannill, secretary. Management is allied with Virginia Underwear Co. and Pannill Knitting Co.

Paul Knitting Mills, Pulaski, Va., will install 20 additional automatic knitting machines; they have also bought 10 additional 300 needle knitting machines.

Virginia State Penitentiary, Richmond, Va., is installing a knitting mill in its industrial department to employ about 30 men to produce clothing for inmates of State institutions in Virginia.

Inspiration Hosiery Mills, Inc., Wytheville, Va., have authorized the installation of 12 knitting machines.

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TEXTILE WORLD'S

Processing Digest

"THE new finishes are big news in the cotton world," according to the Cotton Textile Institute's spring and summer swatch-book. And the fabric samples bear out this boast. The finishes include crease-proof, permanent handkerchief and lawn finish, permanent crinkled finish for organdies, photo-engraving for prints, controlled shrinkage, etc., etc. . . . Not to mention the Three Little Pigs done in dimity.

In the old days, a finisher's lines went along pretty much the same year after year. Today, he has to be working on this year's model if he wants to keep busy.—*Editor.*

Textile Processors Seek "Reasonable Cost" Clause

The Code Authority of the Textile Processing Industry on March 21, asked the National Recovery Administration for permission to include in the code an amendment empowering the authority to determine "lowest reasonable cost" of the service of the industry. The amendment specifies that such power could be exercised only when an emergency caused by "destructive cutting of prices" was deemed to exist. In announcing that objections would have to be made before April 2, Deputy Administrator F. S. Blanchard stated that no public hearing on the amendment would be held.

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Paterson Strike Quickly Settled

Agreement on the part of Paterson, N. J., dyers through the Independent Dyers & Printers to pay plant engineers 75c. per hour and oilers 65c. per hour, brought a quick end to a strike which affected some of the smaller dyehouses there. The strike was called March 12 and lasted only a few hours; 300 men responded. According to the Dyers' Union which ordered the walk-out, engineers and oilers had been receiving 60c. and 50c. previously.

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Oppose Amendments to Silk Finishing Code

The proposed code of trade practice for the rayon and silk dyeing and printing industry was vigorously opposed at a hearing held in Washington, March 15, before assistant deputy administrator, A. Henry Thurston. Charging that Section 24 which prohibits below-cost selling is so phrased that it would drive small dyers out of business, Emanuel Shavick, representing the New York Division of the Institute of Dyers & Printers and the Independent Dyers & Printers Association, said the small dyers would not abide by this rule "except by force." Mr. Shavick's contention that the below-cost clause was too sweeping and favored large dyers was supported by J. E. Simpson, vice-president of the code authority of the industry.

F. J. Gorman, of the United Textile Workers of America, opposed the provision denying workers the privilege of changing from one company to another, and said this violated the constitutional rights of the individual.

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Haskell Reports Progress in Code Compliance

Substantial progress has been made toward effecting industry-wide compliance with the rules of the code in the rayon and silk dyeing, printing, and finishing industry, it was stated last month by Gen. W. N. Haskell, managing director of the code authority. Commenting that some firms still present a problem, he added that the division as a whole is coming to recognize the benefits accruing from code enforcement.

Meanwhile the Code Authority continued its program of tightening up on enforcement. In line with this policy Gen. Haskell made public a list of 93 firms in the industry which "are not in good standing with the code authority because of failure to pay assessments to the code authority for the first two months of 1934"; subsequently it developed that about fifteen of the firms named are under jurisdiction of the Textile Processing Code Authority, a separate division, and hence are not culpable.

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Treatment of Waste from Dyeing and Printing

Chemical treatment of waste from industrial plants to render it harmless to fish and plant life at comparatively little cost was discussed by Dr. Foster D. Snell, Brooklyn, N. Y., at the 87th meeting of the American Chemical Society, held last month in St. Petersburg, Fla. Dr. Snell cited the case of a New Jersey textile printing and dyeing establishment where dye solutions, acids, and other contaminating elements were treated successfully at less than 5c. per 1000 gal.

This plant does piece dyeing and printing on silk, rayon, and cotton, and also on silk-and-cotton and silk-and-wool mixed goods. It also does a minor amount of mercerizing. The predominant colors, which are principally basic and direct dyes, vary from season to season in line with the fashion trends. The waste in this case was found to be 320,000 gal. a day of exhausted dye chemicals, soap, hydrogen peroxide bleach, hydrosulphite, sulphur dioxide, and other substances. When a composite of the wastes was made, it was found that 4 lb. of copperas and 4 lb. of lime per 100 gal. would rectify it suitably. Mechanical equipment for handling the waste included settling tanks of approximately 200,000 gal. capacity. The overflow from the settling basin finally passes over a weir and is then suitable for discharge into a stream. The sludge from the settling basin is suitably disposed of at intervals, or, in some cases, can be passed in regulated amounts to the regulation sewer.

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DuPont-United Affiliation Denied

Reports of pending affiliation between the DuPont Rayon Co. and the United Piece Dye Works were revived during March and excited much discussion in the market. However, emphatic denials that any merger or affiliation was in project, were made both by W. Robert Blum, a director and assistant treasurer of United, and by representatives of the rayon company. DuPont spokesmen attributed the rumor to the fact that both Henry L. Blum, vice-president, and Albert Blum, treasurer of United, are directors of the rayon firm and that the DuPont board frequently holds meetings at United offices in New York.

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Voice Objections to Shrinkers' Code

The efforts of leaders in the textile examining, shrinking and finishing industry to win NRA approval of their demand for a separate code suffered another set-back last month when the proposed code was considered at a public hearing in Washington before Deputy Administrator E. D. Howard. Mr. Howard said the definition of this industry would have to be revised. A recess was declared and some modifications were made in the text of the proposed code. However, objections voiced by David Drechsler of the Men's Clothing Code Authority, subsequent to the revision caused the Deputy Ad-

ministrator to recess the hearing, pending conferences between the various groups looking to drafting of a code which would be generally acceptable.

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Hearing on Textile Processing Code

Public hearing on proposed modifications to the textile processing industry code, approved Jan. 30, will be held by Deputy Administrator F. S. Blanchard on Friday, April 20, in Room A of the Washington Hotel.

The proposed modifications, sponsored by the Code Authority, consist of additional definitions, detailed specifications as to powers and duties of the Code Authority, including grant of power for the Authority to call upon any division of the industry to file lists of their service charges and prices. Additional unfair trade practices are also proposed.

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Fined for Violation of Silk Dyeing Code

Pleading guilty to violations of the rayon and silk dyeing and printing code, the Allied Dye & Print Works, Inc., Clifton, N. J., was fined $1,000 by Federal Judge Philip Forman on April 6, in Trenton, N. J. The prosecution was said to be the first of its kind in the United States. Through its counsel, the defendant concern not only admitted the eleven offenses charged, but expressed regret and declared itself strongly in favor of government regulation and anxious to abide by the provisions of the code. Because of the conditions in the case (TEXTILE WORLD, March, 1934) leniency was recommended by District Attorney Harlan Besson, who stated that a fine of $500 on each count was provided by law, but suggested that a fine of $120 be imposed on each of three counts, and one of $80 on each of the other eight.

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Analysis of Wool Cotton Textiles

A new method for the determination of cotton and wool in mixtures described by Ralph T. Mease and Daniel A. Jessup, in a recent issue of the U. S. Bureau of Standards, Journal of Research, gives results accurate within 1% of the total amount of dry fiber present. In the method recommended, a 5-gram sample of the material is dried to constant weight at 110° C. Total sizing, finishing, and other non-fibrous materials are removed by extracting a sample with carbon tetrachloride, washing, treating with an aqueous solution of a starch-hydrolyzing enzyme, washing, and again drying to constant weight. The cotton content is then determined by treating the sample for 10 min. in a 5% boiling solution of potassium hydroxide; rinsing the residue with hot distilled water, then with 5% acetic acid and finally with water; drying; and weighing the residue. The wool content is determined by drying, extracting, desizing, and drying a sample as described above; treating for 10 min. in a boiling 9% solution of aluminum chloride, heating to 105 to 110° C. until the cotton has become brown and brittle (2 hr. usually sufficient), manipulating the specimen with the hands to pulverize the carbonized cellulose and separate from the wool, washing the wool in a gooch crucible or Bucher funnel, treating the wool in a solution of 1 part concentrated hydrochloric acid to 9 parts of water, rinsing well, and drying to constant weight.

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Majority of Converters Favor Finishing Curtailment

While a few converters challenge the propriety of the continued curtailment of machinery hours by finishers, the prevailing sentiment at the converting end appeared to be favorable to the restriction. Those who support the finishers' program say it has tended to stabilize the market by making for healthier price situation. The converting industry leans more to the view that, as no reform is perfect, curtailment of finishing operations is bound to disturb some firms, but that the benefits as a whole are greater than the injuries.

At the end of March, it was estimated that most printers have their machinery fully committed through the fourth week of April on the basis of the 60-hr. week.

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U. S. Finishing Co. Cuts Losses

A net loss of $369,586 for the year ended Dec. 31, 1933, was reported by United States Finishing Co., as against a net loss of $769,430 for the previous year. This gain of $400,000 represents the first case where the company's report shows improvement over the previous year since 1929. L. S. Little, president, in his report said the current outlook is better due to increased cooperation in the industry but that prices have not yet reached a satisfactory level. The balance sheet showed current assets of $1,140,896 and current liabilities of $773,186.

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Processing Plant News

Joseph Bancroft & Sons Co., Wilmington, Del., reports net loss for 1933 of $93,049 compared with $561,704 loss in 1932.

Pepperell Mfg. Co., Lindale, Ga., plant, has begun the installation of an additional Sanforizing machine at the cloth finishing department.

Algonquin Printing Co., Fall River, Mass., financial statement shows a decline in surplus account during 1933 of $140,407. Current assets however were at $3,443,490 compared with current liabilities of only $269,042. Of the latter item $200,000 was notes payable, the first appearance of such an item on the balance sheet for a number of years.

Standard Textile Products Co., Clifton Boulevard, Clifton, N. J., is considering rebuilding of portion of mill recently damaged by fire, with loss reported close to $25,000, including equipment.

Palisade Piece Dye Works, North Bergen, N. J., has taken over the former mill of the Frank F. Pels Co., Rowland Place and Dell Avenue, previously used for silk bleaching and dyeing, and will remodel and improve. Additional equipment will be installed. Unit is three-story, 125x400 ft.

Diamond Piece Dye Works, Inc., Paterson, N. J., has been organized with capital of $125,000, to operate a local mill. New company is headed by Thomas Pirole and Murray Yedwab, Paterson, and is represented by Louis C. Rosenthal, 64 Hamilton Street. The same interests have also chartered the **Dundee Piece Dye Works, Inc.,** with like capital, to operate a similar mill in a neighboring town.

Velveray Corp. of America has acquired the plant formerly conducted by Floc Art Print Works, Inc., Paterson, N. J., and will operate as one of its divisions under the name **Velart Corp.**

PROCESSING IN THIS ISSUE

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QUOTATIONS

At close of business, April 2, 1934

Prices cover average qualities unless otherwise stated.

Cotton Goods

	*Apr. 2	*Mar. 1	1933 Apr. 1
PRINT CLOTHS			
27-in., 64x60, 7.60	4¼	5	2¼
38½-in., 64x60, 5.35	6¼	7¼	3¼
39-in., 68x72, 4.75	7¼	8	3⅞
39-in., 72x76, 4.25	8¼	9¼	4¼
39-in., 80x80, 4.00	9¼	10	4¾
BROWN SHEETINGS			
36-in., 56x60, 4.00	8	8½	3¾
36-in., 48x48, 5.00	6¾	6¾	4¼
37-in., 48x48, 4.00	7¼	7¾	4¾
MISCELLANEOUS			
Drills, 37-in., 3 yd	9¾	10	4¾
Denims, 2.20	16	16	9
Tickings, 8 oz.	18½	18½	10
Standard prints	7¼	7¼	5¼

*Tax included.

Cotton Waste

Peeler comber	13.50c
Peeler strip	12.25c
White spooler (single)	6.00c

Cotton Prices

Spot Cotton at:	Apr. 2	Mar. 1	For Month High	For Month Low	1933 Apr. 1
New York	12.15	12.20	12.50	12.00	6.40
New Orleans	12.11	11.97	12.39	11.88	6.33
Liverpool	.....	6.52	6.71	6.35	5.06

FLUCTUATIONS OF FUTURES

	Closed Apr. 2	For Month High	For Month Low	Closed Mar. 1	Net Change
April	11.89	12.23	11.72	11.93	—0.04
May	11.94	12.29	11.77	11.99	—0.05
June	11.99	12.33	11.83	12.06	—0.07
July	12.05	12.39	11.89	12.14	—0.09
Oct	12.20	12.54	12.03	12.29	—0.09
Nov	12.25	12.59	12.08	12.39	—0.14
Dec	12.30	12.70	12.13	12.41	—0.11
Jan	12.35	.....	.....	12.47	—0.12
Mar	12.50	.....	.....	.....	.....

AVERAGE PRICE JUNE-JULY SHIPMENT HARD WESTERN COTTON

	F.o.b. New England Middling	St. Middling
1⅛-in.	14.80	16.06
1 3/16-in.	14.30	17.80
1¼-in.	19.55	21.55

Based on July 12.05

FOREIGN COTTONS

Alexandria Exchange, March 29

May, Sak	15.98
April, Uppers	11.92
Shipment c.i.f. Boston (Tariff not included)	
Medium Sak	27.55
Medium Uppers	22.95
(By Anderson, Clayton & Co.)	
India Rough, Calcutta Camilla	10.50
China Tientsin No. 1	13.50

Quotations on cotton cloth and cotton yarn as given on this page include the cotton processing tax. Where figures for dates earlier than Aug. 1, 1933, are given for comparison, such figures of course do not include this tax.

Raw Silk

Prices Nominal

	13/15 White	20/22 White	20/22 Yellow
Special Grand, 85%	1.62	1.37	1.32
Grand XX, 83%	1.49	1.35	1.28
Special Crack, 81%	1.43	1.31	1.26
Crack XX, 78%	1.40	1.30	1.25
Extra, Extra, 73%	1.37	1.28	1.23
Best Extra, 68%	1.33	.....	.....

RAW SILK EXCHANGE

	Apr. 2	Mar. 1	For Month High	For Month Low	Net Change
April	1.31½	1.41	1.41	1.28½	—0.09½
May	1.33½	1.41	1.42	1.30½	—0.07½
June	1.33½	1.41	1.42	1.30½	—0.07½
July	1.33½	1.41½	1.43	1.31	—0.07½
August	1.33½	1.42	1.42½	1.31	—0.08½
Sept	1.34	1.42	1.43½	1.31½	—0.08
Oct	1.34½	1.42½	1.43½	1.31	—0.08

Silk Yarns

Hosiery tram 5thd. Japan, 85%	$2.27½
Hosiery tram, 5thd. crack XX, 78%	2.07½
60/2 spun silk	2.95

RAYON WASTE

Thread (for garnetting)	$0.17

Cotton Yarn (Nominal)

(Tax Added)

CARDED (Average Quality)

Double Carded 2c—4c., higher according to quality

SINGLE SKEINS OF TUBES (WarpTwist)

4s to 8s	$0.28	20s	$0.31½
10s	.28½	24s	.33½
12s	.29	26s	.34½
16s	.30	30s	.36½

TWO-PLY SKEINS AND TUBES

8s-2	$0.29½	20s-2	$0.32
10s-2	.29	24s-2	.34
14s-2	.30	30s-2	.37
16s-2	.30½	40s-2	.43

SINGLE WARPS

10s	$0.29	20s	$0.32
14s	.30	24s	.34
16s	.30½	30s	.37

TWO-PLY WARPS

8s-2	$0.29	20s-2	$0.32½
10s-2	.29½	24s-2	.34½
14s-2	.30½	30s-2	.35½
16s-2	.31	40s-2 ordin.	.43½

HOSIERY CONES (Frame Spun)

8s	$0.28½	18s	$0.31
10s	.29	20s	.32
12s	.29½	22s	.33
14s	.30	24s	.34
16s	.30½	26s	.35

COMBED PEELER (Average Quality)
TWO-PLY—(Knitting Twist) Cones

20s-2	$0.40	50s-2	$0.53½
30s-2	.44	60s-2	.58
40s-2	.48	80s-2	.76

WARPS, SKEINS AND CONES
TWO-PLY—(Warp Twist)

20s-2	$0.40½	50s-2	$0.54½
30s-2	.44½	60s-2	.59½
36s-2	.46½	70s-2	.69½
40s-2	.48½	80s-2	.78½

SINGLES

14s	$0.35	38s	$0.45
20s	.37½	40s	.46
28s	.40	50s	.51
30s	.41	60s	.58

MERCERIZED CONES—(Combed, Ungassed)

30s-2	$0.55	60s-2	$0.73
40s-2	.60	80s-2	1.00

Wool

OHIO, PENNSYLVANIA, ETC. (GREASE)

Fine delne	$0.35–$0.36	⅜ blood	$0.41–$0.42
Fine clthg	.29– .30	¼ blood	.40– .41
⅜ blood	.35– .36		

TEXAS AND CALIFORNIA (CLEAN)

Texas, 12 months	$0.83 –$0.85
California, Northern	.74 – .77

MONTANA, IDAHO, WYOMING (CLEAN)

Staple fine	$0.85 –$0.86
Staple ½ bld	.82 – .84
Fine and fine medium (original bag)	.80 – .82
⅜ blood	.80 – .82
¼ blood	.72 – .73

EASTERN SCOURED PULLINGS

A.A	$0.95 –$0.97	B-Super	$0.73 –$0.80
A-Super	.85 – .88	C-Super	.68 – .72

CARPET WOOL (Nominal)

Aleppo (clean)	$0.20 –$0.22
Sining	.13 – .17
China filling (clean)	.12 – .16

Tops and Noils

TOPS—BOSTON

Fine (64-66s)	$1.17 –$1.19
Half-blood (60-62s)	1.13 – 1.14
Aver. ¾ blood (56s)	1.06 – 1.07
¼ blood (50s)	.95 – .96

NEW YORK TOP FUTURES

	Closed Apr. 2	For Month High	For Month Low	Closed Mar. 1
May	100.50	109.80	101.50	107.30
June	101.10	108.10	101.60	107.80
July	101.20	108.50	102.00	108.30
Sept	101.40	108.70	102.70	108.80
Jan	101.80	109.10	103.50	110.40

TOPS—BRADFORD ENG. (Apr. 2)

Fine (64s)	38½d	¾ bld. (56s)	27½d
½ bld. (60s)	36½d	¼ bld. (50s)	23 d

NOILS—BOSTON

Fine	$0.58 –$0.60	¾ bld.	$0.52 – $0.53
Half bld.	.54 – .56	¼ bld.	.49 – .51

Worsted Yarns

ENGLISH SYSTEM WEAVING

2-20s 44s	$1.20 –$1.30	2-36s 58s	$1.55 –$1.60
2-30s 46s	1.30 – 1.40	2-40s 60s	1.60 – 1.70
2-30s mixes	1.70 – 1.80	2-50s 64s	1.75 – 1.85

ENGLISH SYSTEM KNITTING

2-20s 44s	$1.15 –$1.25	2-20s 60s	$1.40 –$1.50
2-20s-50s	1.20 – 1.30	2-20s 64s	1.45 – 1.55

FRENCH SYSTEM

1-26s 64s	$1.50 –$1.55	2-40s 64s,	
1-30s 64s, warp	1.50 – 1.60	Zephyrs	$1.70 –$1.75
		2-50s 66s	1.80 – 1.85

Domestic Rayon (Skeins)

VISCOSE PROCESS

Denier	Filament	Price	Denier	Filament	Price
50	14	$1.25	150	24–40	$0.65
75	30	1.00	150	60	.70
100	40	.85	300	44	.55
125	36	.72			

NITRO-CELLULOSE PROCESS

Denier	First Qual.	Denier	First Qual
75	$1.05 –$1.10	150	$0.70
100	.90 – .95	175	.70

ACETATE PROCESS

Denier	Price	Denier	Price
45	$1.30	100	$0.95
60	1.20	120	0.80—0.85
75	1.10	150	0.78

CUPRAMMONIUM PROCESS (TWISTED)

Denier	Filament	Price	Denier	Filament	Price
30	24	$1.60	100	75	$1.00
75	60	1.20	150	112	.90